

**Standard
Construction
Specifications
2004 Edition**

City of Pullman
**STANDARD CONSTRUCTION
SPECIFICATIONS
2004 EDITION**

Adopted by City Council

**December 14, 2004
Ordinance No. 04-37**

CITY OF PULLMAN STANDARD CONSTRUCTION SPECIFICATIONS

2004 Edition

Adopted by Ordinance #04-37

SECTION A: DEFINITIONS

1. "City of Pullman Standard Construction Specifications" means the 2004 Standard Specifications for Road, Bridge, and Municipal Construction and the Division 1 APWA Supplement published by the Washington State Department of Transportation as they are amended in Section C: Supplemental Specifications below and the City of Pullman Standard Drawings.

SECTION B: HOW TO OBTAIN COPIES

1. Copies of 2004 Standard Specifications may be obtained by writing:

Building Tech Bookstore, Inc.
8020 SW Cirrus Drive
Beaverton, OR 97008
2. Copies of the Supplemental Specifications and Standard Drawings may be obtained from the Public Works Dept. office in Pullman City Hall, 325 S.E. Paradise Street, Pullman, WA 99163.

SECTION C: SUPPLEMENTAL SPECIFICATIONS

1. Division 1 of the Standard Specifications and the Division 1 APWA Supplement are revised and augmented as follows:
 - (a) Amend the definition of "contracting agency" in Section 1-01.3 as follows:

"Contracting Agency" is the City of Pullman.
 - (b) Replace the first sentence of 1-02.7 Bid Deposit with the following :

"When bids are anticipated to exceed \$100,000 as estimated by the Engineer, a deposit of at least five percent (5%) of the total bid shall accompany each bid."
 - (c) Insert the following as a new second paragraph to 1-05.10 Guarantees:

"The Contractor shall indemnify and hold the City of Pullman harmless from any damage or expense by reason of failure of performance as specified in said contract or from defects appearing or developing in the material or workmanship provided or performed under said contract within a period of one year after its acceptance thereof by the City of Pullman."
 - (d) Add the following to Section 1-07.7(1) Load Limits:

When the gross vehicle weight of a truck delivering material to the job site exceeds the gross vehicle load limit for which the vehicle is licensed by more than 1000 pounds, as determined by scale tickets, the City will not pay for that material which exceeds the load limit.

- (e) Add the following to Section 1-07.14 Responsibility for Damage:

The Contractor shall save, keep and hold harmless the City, its officers, agents, employees and volunteers from all damages, costs or expenses in law or equity that may at any time arise or be set up because of damages to property or personal injury received by reason of or in the course of performing work which may be occasioned by any willful or negligent act or omissions of the Contractor, any of the Contractor's employees, or any subcontractor. The City will not be held liable for any accident, loss or damage to the work prior to its completion and acceptance.

- (f) Add the following to Section 1-07.17 Utilities and Similar Facilities:

The Palouse Empire Underground Coordinating Council provides a one call number for requesting location of underground utilities. The number is 1-800-424-5555.

- (g) Replace Section 1-07.18 Public Liability and Property Damage Insurance with the following:

1.07.18 Insurance Requirements For Contractors

BIDDERS' ATTENTION IS DIRECTED TO THE INSURANCE REQUIREMENTS BELOW. IT IS HIGHLY RECOMMENDED THAT BIDDERS CONFER WITH THEIR RESPECTIVE INSURANCE CARRIERS OR BROKERS TO DETERMINE IN ADVANCE OF BID SUBMISSION THE AVAILABILITY OF INSURANCE CERTIFICATES AND ENDORSEMENTS AS PRESCRIBED AND PROVIDED HEREIN. IF AN APPARENT LOW BIDDER FAILS TO COMPLY STRICTLY WITH THE INSURANCE REQUIREMENTS, THAT BIDDER MAY BE DISQUALIFIED FROM AWARD OF THE CONTRACT.

Contractor shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees or subcontractors. The cost of such insurance shall be included in the Contractor's bid.

(1) **Minimum Scope of Insurance**

Coverage shall be at least as broad as:

- (aa) Insurance Services Office form number GL 0404 covering Broad Form Comprehensive General Liability; or Insurance Services Office Commercial General Liability coverage ("occurrence" form CG 0001).
- (bb) Insurance Services Office form number CA 0001 (current edition) covering Automobile Liability, code 1 "any auto" and endorsement CA 0025.
- (cc) Workers' Compensation insurance as required by the State of Washington.

- (dd) The Contractor's insurance coverage shall specifically include protection against explosion, collapse, and underground (X, C, U) hazards. The cost for providing this additional coverage shall be considered incidental to the contract.

(2) Minimum Limits of Insurance

Contractor shall maintain limits no less than:

- (aa) General Liability: \$1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit.
- (bb) Automobile Liability: \$1,000,000 combined single limit per accident for bodily injury and property damage.
- (cc) Workers' Compensation: Limits as required by the State of Washington.

(3) Deductibles and Self-Insured Retentions

Any deductibles or self-insured retentions must be declared to and approved by the City. At the option of the City, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the City, its officers, officials, employees and volunteers; or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

(4) Other Insurance Provisions

The general liability and automobile liability policies are to contain, or be endorsed to contain, the following provisions:

- (aa) The City, its officers, officials, employees and volunteers are to be covered as additional insureds as respects: liability arising out of activities performed by or on behalf of the Contractor; products and completed operations of the Contractor; premises owned, occupied or used by the Contractor; or automobiles owned, leased, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to the City, its officers, officials, employees or volunteers.
- (bb) The Contractor's insurance coverage shall be primary insurance as respects the City, its officers, officials, employees and volunteers. Any insurance or self-insurance maintained by the City, its officers, officials, employees and volunteers shall be excess of the Contractor's insurance and shall not contribute with it.

- (cc) Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the City, its officers, officials, employees and volunteers.
- (dd) The Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.
- (ee) Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after forty-five (45) days' prior written notice by certified mail, return receipt requested, has been given to the City.

(5) Acceptability of Insurers

Insurance is to be placed with insurers with a Best's rating of no less than A:VII.

(6) Verification of Coverage

Contractor shall furnish the City with ACORD form certificates of insurance to which a completed Insurance Coverage Questionnaire has been attached, along with policy forms as required, and a workers' compensation status letter affecting required coverage. The certificates, questionnaire, and policy forms are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates, questionnaires, policy forms, and letters are to be received and approved by the City before work commences. The City reserves the right to require complete, certified copies of all required insurance policies at any time.

(7) Subcontractors

Contractor shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverage for subcontractors shall be subject to all of the requirements stated herein.

- (h) Insert the following before the first sentence of the second paragraph in Section 1-09.6(3) Force Account for Equipment:

- (1) General: Rental rates for equipment that is locally available shall be established at prevailing local rates.

- (i) Insert the following after the second sentence in Section 1-09.6(5) Force Account Mobilization:

The City will pay mobilization and demobilization to the nearest piece of equipment available from any source. If the Contractor chooses to bring in his own equipment from a greater distance, mobilization-demobilization shall be compensated based on the distance to the nearest equipment available.

2. Division 2 of the Standard Specifications is revised and augmented as follows:

- (a) The compaction requirements of Sections 2-03.3(14)C; 2-03.3(14)I; 2-06.3 and 2-09.3 shall be amended as follows:

Earth embankments and backfill of excavations not under pavement or other structures shall be compacted to 80 percent of maximum density as provided in Section 2-03.3(14)D Amended.

Earth embankments and backfill of all excavations under pavements or other structures shall be compacted to 90 percent of maximum density as provided in Section 2-03.3(14)D Amended to 6 inches below subgrade. The zone from subgrade to 6 inches below subgrade shall be compacted to 95 percent of maximum density as provided in 2-03.3(14)D Amended.

All base materials above subgrade shall be compacted to 95 percent of maximum density as provided in Section 2-03.3(14)D Amended.

In-place density and moisture content shall be determined by nuclear densometer.

- (b) Replace Section 2-03.3(14)D Compaction and Moisture Control Tests with the following:

Maximum density and optimum moisture content will be determined using ASTM test method D1557 (modified proctor).

- (c) Add new Section 2-07.2 Construction Water as follows:

The Contractor may obtain water from a City fire hydrant (at no cost on City funded projects), by requesting a special hydrant outlet a minimum of 48 hours in advance. The outlet shall be used only by the Contractor and only for the project specified. The Contractor shall not operate the fire hydrant. Flow control shall be accomplished by means of the outlet valve provided. The Contractor shall furnish hoses and other transport equipment.

- (d) Replace the second paragraph under "Alternative Sources" in Section 2-09.3(1)E Backfilling with the following:

Controlled density fill shall meet the following requirements:

<u>Ingredients</u>	<u>Amount Per Cubic Yard</u>
Portland cement	94 pounds
Aggregate class 1 or 2	3,300 pounds
Entrained air	5 percent minimum
Fly ash	60 pounds
Water	20 gallons maximum

3. Division 3 of the Standard Specifications is revised and augmented as follows:
 - (a) Replace the first three paragraphs of Section 3-01.5 Measurement with the following:

For payment purposes, all crushed, screened, or naturally occurring materials that are to be paid for by the ton shall be measured in accordance with Section 4-04.4.
4. Division 4 of the Standard Specifications is revised and augmented as follows:
 - (a) Replace the first paragraph of Section 4-04.4 Measurement with the following:

Crushed surfacing top course, base course, ballast, and gravel base, when processed at a central plant, will be measured by the ton.
5. Division 5 of the Standard Specifications is revised and augmented as follows:
 - (a) Add the following to Section 5-04.3 Construction Requirements:

Hot mix asphalt shall be ½" Commercial mix unless specified otherwise in the contract.

An approved paving contractor shall perform all asphalt paving and patching. Utility covers, except for survey monuments, located in the pavement shall be adjusted to final grade before the final lift of pavement is placed.
 - (b) Add the following to Section 5-04.3(11) Joints:

At the end of the workday, there shall be no longitudinal joint in the wearing course with an exposed length in excess of 25 feet.
 - (c) Add the following to Section 5-05.3 Construction Requirements:

An approved paving contractor shall perform all concrete paving and patching.
 - (d) Replace Section 5-05.3(13) Curing with the following:

Immediately after finishing operations have been completed and as soon as marring of the concrete will not occur, the entire surface of the newly placed concrete shall be coated with a cure and seal product as specified in 6-02.3(11) as amended herein.
6. Division 6 of the Standard Specifications is revised and augmented as follows:
 - (a) Replace Section 6-02.3(2)B Commercial Concrete with the following:

Commercial concrete shall meet the following requirements:

Coarse aggregate grading #5
564 pounds per cubic yard minimum cement content
0.49 maximum water/cement ratio
4-inch maximum slump
5 – 8 percent entrained air measured at the job site
3,000 psi minimum 28-day compressive strength

The Contractor may add up to 75 pounds per cubic yard of fly ash to the mix. Fly ash shall not be substituted for Portland cement. The Contractor shall provide a mix design to the Engineer for approval a minimum of 7 days prior to proposed use.

- (b) Replace Section 6-02.3(11) Curing Concrete with the following:

Immediately after finishing and/or the disappearance of the "sheen" of surface water, concrete surfaces shall be uniformly and completely coated with an approved, clear, acrylic copolymer curing and sealing compound such as Rez-Seal 800 manufactured by Euclid Chemical Co. in accordance with manufacturer's recommendations. To be approved, alternate products shall be the same product type and provide the same deposition of solids and performance.

7. Division 7 of the Standard Specifications is revised and augmented as follows:

- (a) The compaction requirements of Division 7 shall be amended pursuant to Section C:2.(a) of these Standard Construction Specifications.

- (b) Replace the last three paragraphs of Section 7-01.2 Materials with the following:

Drainpipes up to 27 inches in diameter shall be PVC sewer pipe that meets the requirements of 9-05.12(1), unless specifically approved otherwise by the Engineer. Larger diameter pipes shall be as specified by the Engineer.

- (c) Replace Section 7-09.1 Description with the following:

Pipe for water mains shall be ductile iron or PVC conforming to Sections 9-30.1(1) and 9-30.1(5), respectively, unless specifically approved otherwise by the Engineer. Restrained joints shall be used only with approval by the Engineer.

- (d) Replace the last sentence of the first paragraph of Section 7-09.3(23) Hydrostatic Pressure Test with the following:

The City will provide necessary labor, test pump, gauges and water to perform pressure tests of all water pipelines. The Contractor shall provide excavations, thrust blocking, test plugs, pump and air relief connections, traffic control and all other items needed to meet the requirements of this section. The Contractor shall have all pipe, fittings, and thrust block installation sufficiently complete to allow the testing to occur, prior to calling out the Engineer to perform the pressure test. The Contractor shall request pipe testing a minimum of 48 hours in advance.

- (e) Add the following after the second sentence of the ninth paragraph of Section 7-11.3(11) Hydrostatic Pressure Test:

If the utility pipeline being tested fails the initial pressure test, the Contractor shall reimburse the City for labor, material, and equipment costs for additional pressure testing and additional flushing of water pipelines on a time and material basis.

- (f) Replace Section 7-09.3(24) Disinfection of Water Mains with the following:

7-09.3(24) Disinfection of Water Mains

New water lines and extensions of water lines in excess of 20 feet in length shall satisfactorily pass bacteriological tests before the new mains or extensions are connected to the existing water system. Main extensions shorter than 20 feet and sections of pipe and fittings used to connect new water mains to the existing water system shall be soaked 24 hours in a 50 mg/l chlorine solution. In addition the connecting pipe and fittings shall be swabbed with a calcium hypochlorite paste immediately before they are installed.

The Contractor shall dose all lengths of pipe with dry, high test calcium hypochlorite (65-70% chlorine) as the pipeline is constructed. The dosage rate in grams of 65% test calcium hypochlorite per 20 foot length of pipe equals

$$0.008431 \times d^2$$

in which "d" is the diameter in inches.

The Contractor shall request pipe testing a minimum of 48 hours in advance. The City will provide necessary equipment and labor, water and materials to flush and perform bacteriological tests of all water pipelines. Disinfection, flushing and testing shall be performed as recommended by the American Water Works Association. The Contractor shall provide excavations, thrust blocking, traffic control, plugs, caps, fittings, and the other items needed to meet the requirements of this section. The Contractor shall provide a tank truck to receive and dispose of flushing water if a sanitary sewer is not readily available.

If the utility pipeline being tested fails the initial bacteriological test, the Contractor shall reimburse the City for labor, material, and equipment costs for additional bacteriological testing and additional flushing of water pipelines on a time and material basis. The Engineer may order a second bacteriological test at his discretion 48 hours after final connections are made and before the new line is placed in service. The City will pay the cost of this test. If this test fails, costs of flushing and additional tests shall be the responsibility of the Contractor.

- (g) Delete Sections 7-09.3(24)A, 7-09.3(24)B, 7-09.3(24)C, 7-09.3(24)D, 7-09.3(24)E, 7-09.3(24)F, 7-09.3(24)G, 7-09.3(24)H, 7-09.3(24)I, 7-09.3(24)J, 7-09.3(24)K, 7-09.3(24)L, 7-09.3(24)M, 7-09.3(24)N, and 7-09.3(24)O.

- (h) Replace the first paragraph of Section 7-17.2 with the following:

Pipe for sewer mains shall be ductile iron sewer pipe or solid wall PVC pipe conforming to Sections 9-05.13 and 9-05.12, respectively, unless specifically approved otherwise by the Engineer.

8. Division 8 of the Standard Specification is revised and augmented as follows:

- (a) Add the following sentence to the end of the first paragraph in Section 8-01.3(1)B Erosion and Sediment Control (ESC) Lead

For non-federally funded projects the requirement for a Certificate of Training in Construction Site Erosion and Sedimentation Control shall be waived.

9. Division 9 of the Standard Specifications is revised and augmented as follows:

- (a) The requirements of Sections 9-02.2(1) and 9-02.2(2) are waived by the Engineer on non-federally funded projects using less than 3000 tons of asphalt concrete pavement.
- (b) The gradation for Top Course and Keystone in Section 9-03.9(3) Crushed Surfacing is replaced with the following:

<u>Sieve Size</u>	<u>Percent Passing</u>
1"	100
¾"	94-100
¼" square	55-75
U.S. No. 40	8-24
U.S. No. 200	10.0 max.
% Fracture	75 min.
Sand Equivalent	35 min.

- (c) Replace Section 9-03.12(3) Gravel Backfill for Pipe Zone Bedding with the following:

Gravel backfill for pipe bedding shall meet the requirements for crushed surfacing top course in Section 9-03.9(3) Amended.

- (d) Replace Section 9-05.1(5) PVC Drain Pipe with the following:

PVC pipe for drains shall meet the requirements of Section 9-05.12.

- (e) Add the following sentence to 9-30.2(1) Ductile Iron Pipe:

All fittings and valves shall be mechanical joint unless otherwise shown on the construction drawings.

- (f) Replace the last paragraph of section 9-30.6(4) Service Fittings with the following:

Fittings used for polyethylene tubing shall be compression type with stainless steel liners.

CITY OF PULLMAN STANDARD ABBREVIATIONS

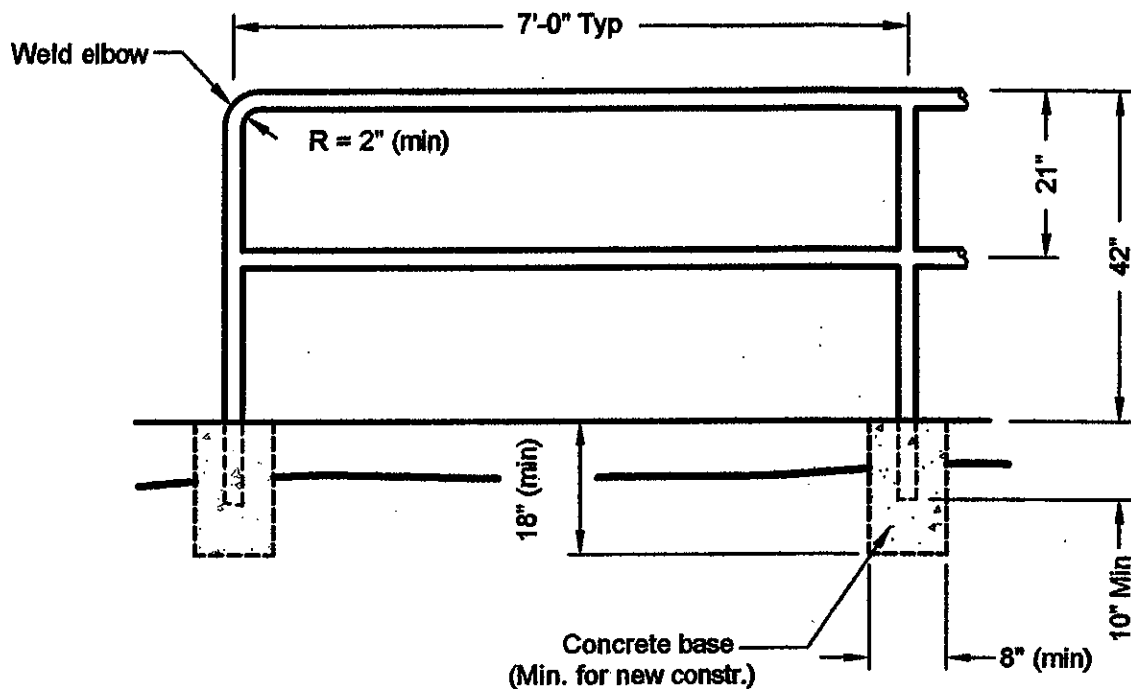
@	at	L.S.	lump sum
A.C.	asphalt concrete	Lt.	left
ACP	asphalt concrete pavement	Max.	maximum
Aggr.	aggregate	MH	manhole
Asph.	asphalt	Min.	minimum
Bldg.	building	N	north
BM	benchmark	No.	number
Bng.	bearing	Pavt.	pavement
CL	centerline	PC	point of curvature
CAP	corrugated aluminum pipe	PCC	portland cement concrete
C.B.	catch basin	PI	point of intersection
C.F.	cubic foot	PT	point of tangency
Cl.	class	Rt.	right
CI	cast iron	S	south
CMP	corrugated metal pipe	San.	sanitary
Conc.	concrete	S.D.	storm drain
Const.	Construct, construction	Sdwk.	sidewalk
CSTC	crushed surfacing top course	S.F.	square foot
CSBC	crushed surfacing base course	Sht.	sheet
C.Y.	cubic yard	Spec.	specifications
Dr.	drive	St.	street
Drwy.	driveway	Sta	station
Dwg.	drawing	Std.	Standard
E	east	S.Y.	square yard
Ea.	each	T.	ton
Elev.	elevation	Typ.	typical
EOP	edge of pavement	VC	vertical curve
Exc., Excav.	excavate; excavation	W	west
Exist.	existing	Yd.	Yard
FH	fire hydrant		
Fin.	finish; finished		
Ft.	foot		
HMA	hot mix asphalt		
In.	inch		
Inv.	invert		
Jt.	joint		
Lb.	pound		
L.F.	linear foot		

STANDARD DRAWINGS

CONTENTS

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28. VALLEY GUTTER
29. EROSION BARRIERS

09-02-2004



NOTES:

1. Top railing shall be 2 inch Schedule 40 clean black steel pipe. Stanchions and intermediate rails shall be 1-1/2 inch (min) Schedule 40 clean black steel pipe.
2. Weld pipe joints. Remove all sharp edges and burrs.
3. Stanchions shall be welded, bolted, grouted, or otherwise firmly set to prevent movement of the rail. Stanchions for new construction shall be set in concrete as shown above.
4. Stanchions shall be vertical regardless of the slope of the wall, sidewalk, or ground surface.
5. The installed railing shall be solvent-cleaned, made free of rust or other contaminants, and coated with gloss black Sherwin-Williams DTM acrylic coating # B66B11, Kem-400 coating # F75B401, or approved equal.
6. Total dry paint film thickness shall be no less than 4.5 mils.
7. Alternate materials may be used with the prior approval of the Engineer.

AutoCAD: Pedestrian Railing

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PEDESTRIAN RAILING

1

CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: 12/14/04

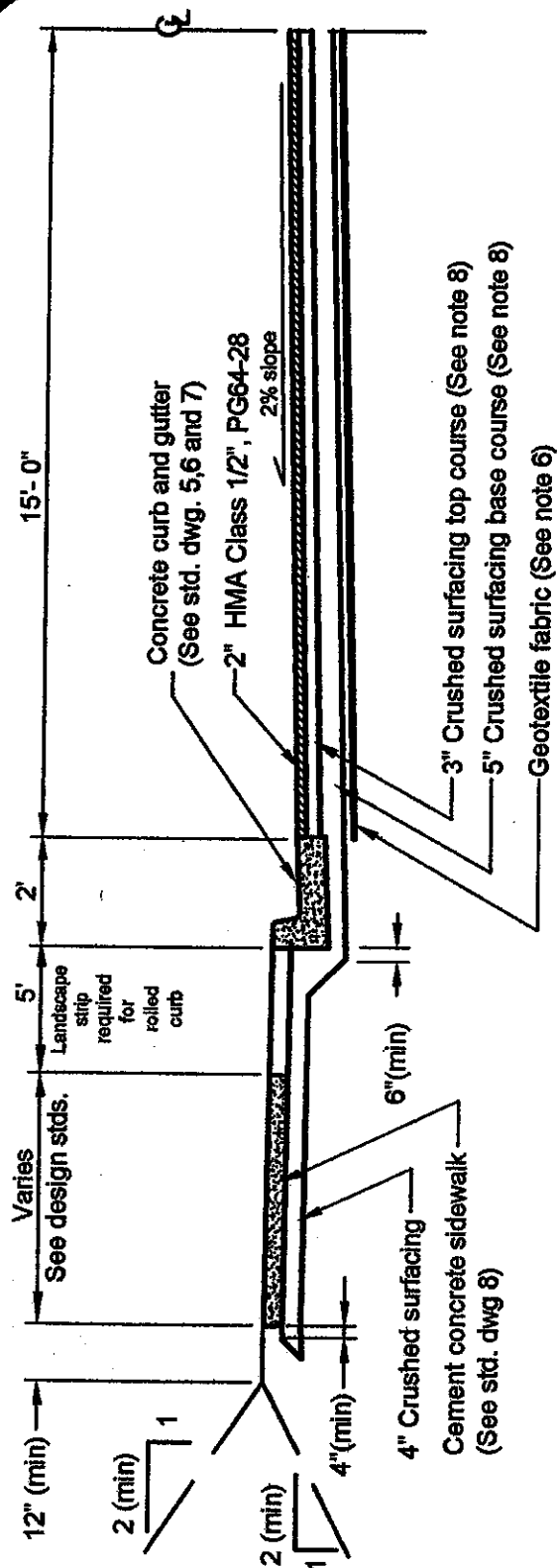
AutoCAD: Asphalt Street Typical Section

Rev 3-00
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ASPHALT SECTION FOR RESIDENTIAL STREETS

CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: 12/14/04



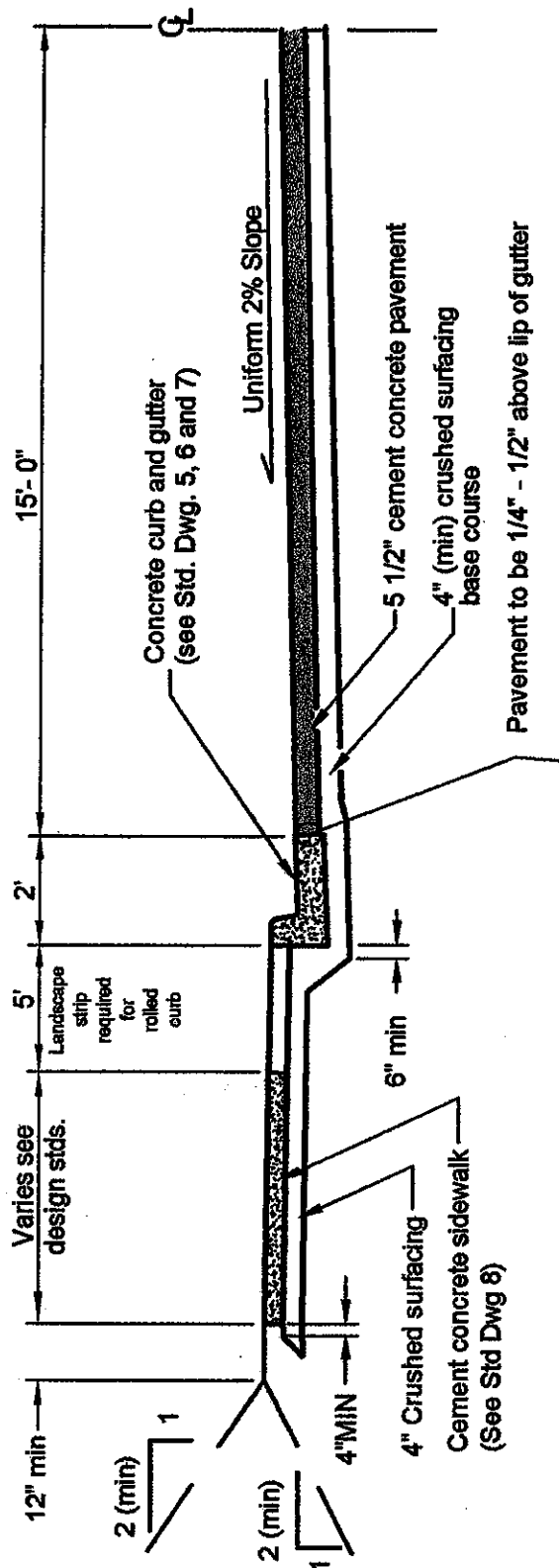
TYPICAL HALF-SECTION

NOTES:

1. Half-Section is symmetrical about the centerline.
2. All dimensions are minimums.
3. This design is for typical clayey-silt soils found in the Pullman area. Where other soil types are encountered, the Engineer may establish greater or lesser minimum thicknesses or eliminate the geotextile fabric.
4. In solid rock, cut slope may be steepened from 2 : 1 to 1 1/2 : 1
5. In cuts greater than 6 feet in height, acceptable side slopes will be determined by the Engineer based on engineering analysis.
6. Geotextile fabric shall be a woven material meeting or exceeding the following:
Tensile Strength : ASTM D1682, 200 lbs.
Puncture strength : ASTM D751, 80 lbs
Elongation : ASTM D1682, 15 %
Mullen Burst Strength : ASTM D3786, 400psi
7. Compact the top 6 inches of subgrade to 95 % of maximum theoretical density : ASTM D1557 (Modified Proctor method).
8. Standard 33-foot-wide streets, or narrower, shall be paved in 2 passes, max.

PAGE NO:

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TYPICAL HALF-SECTION

NOTES:

1. Section as drawn is symmetrical about the centerline.
2. All dimensions are minimums.
3. Cement concrete pavement shall be in accordance with the 2004 edition of the Standard Specifications. Compliance is required with the city of Pullman Standard Construction Specifications, Section C-4.
4. In solid rock, the cut slope may be steepened from 2 : 1 to 1 1/2 : 1.
5. In cuts greater than 6 feet in height, acceptable side slopes will be determined by the Engineer based on engineering analysis.
6. Curb and gutter may be cast integrally with the pavement.
7. Compact the top 6 inches of subgrade to 95 % (min) of maximum theoretical density per ASTM D1557 (Modified Proctor Method).

AutoCAD: Concrete Street Typical Section

dws 3-00
DRR

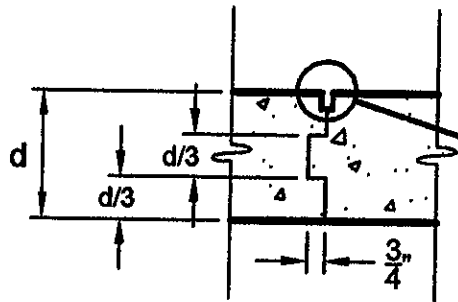
CONCRETE SECTION FOR RESIDENTIAL STREETS

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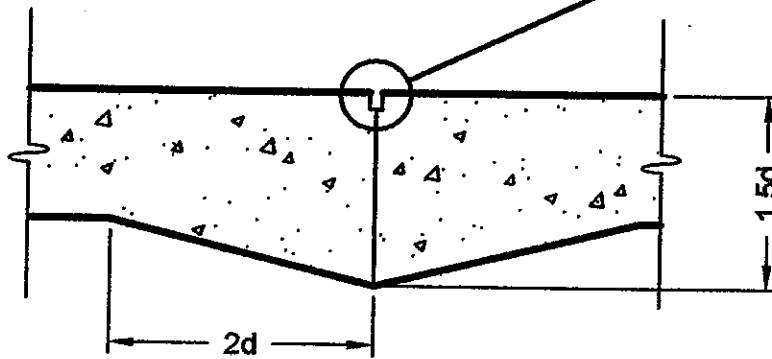
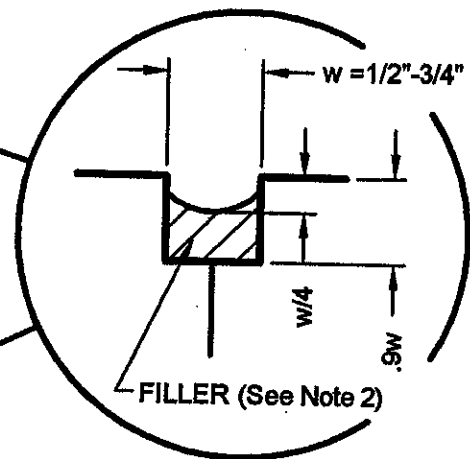
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CITY OF PULLMAN
ENGINEERING DIVISION

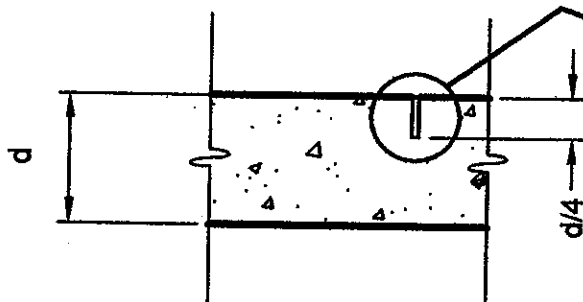
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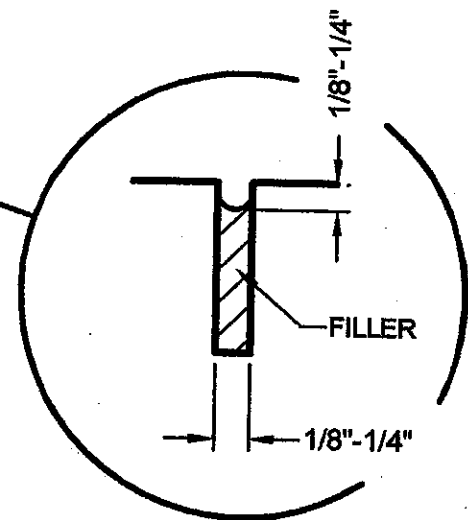
KEYED CONSTRUCTION JOINT



THICKENED EDGE CONSTRUCTION JOINT



CONTRACTION JOINT



NOTES:

1. Contraction joints may be tooled, impressed, or sawn.
2. Sawn or open tooled joints shall be filled with approved elastomeric filler.

AutoCAD: Joints - Concrete Pavement

dwc 3-00
DBB

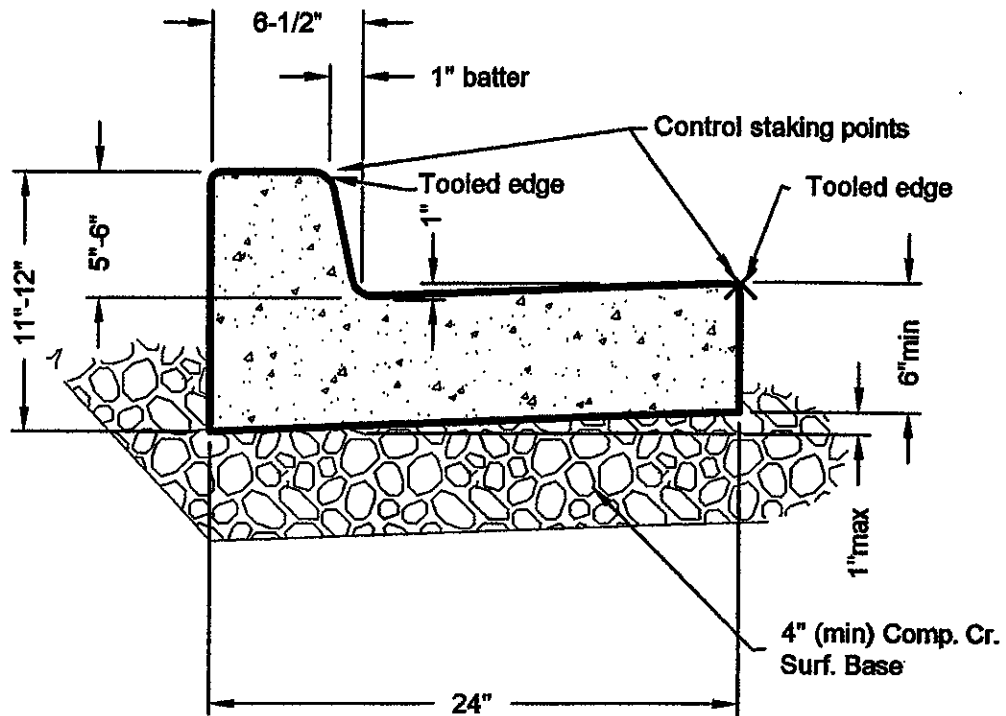
CONCRETE PAVEMENT JOINT ALTERNATIVES

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CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: 12/14/04



TYPICAL SECTION

NOTES:

1. Construction joints with tooled edges shall be cut 1/4 to 1/3 the section depth at 10-foot intervals or as directed by the Engineer. Curb joints shall match street joints when adjacent to concrete pavement.
2. Through joints and full form plates shall not be used except where specifically approved by the Engineer.
3. All exposed corners shall be tooled to a 1/2-inch (min) radius.
4. Do not use expansion joints.
5. Construction stakes shall establish the face of curb for horizontal control and lip of gutter for vertical control.

AutoCAD: Curb & Gutter

dwc 3-00
DBR

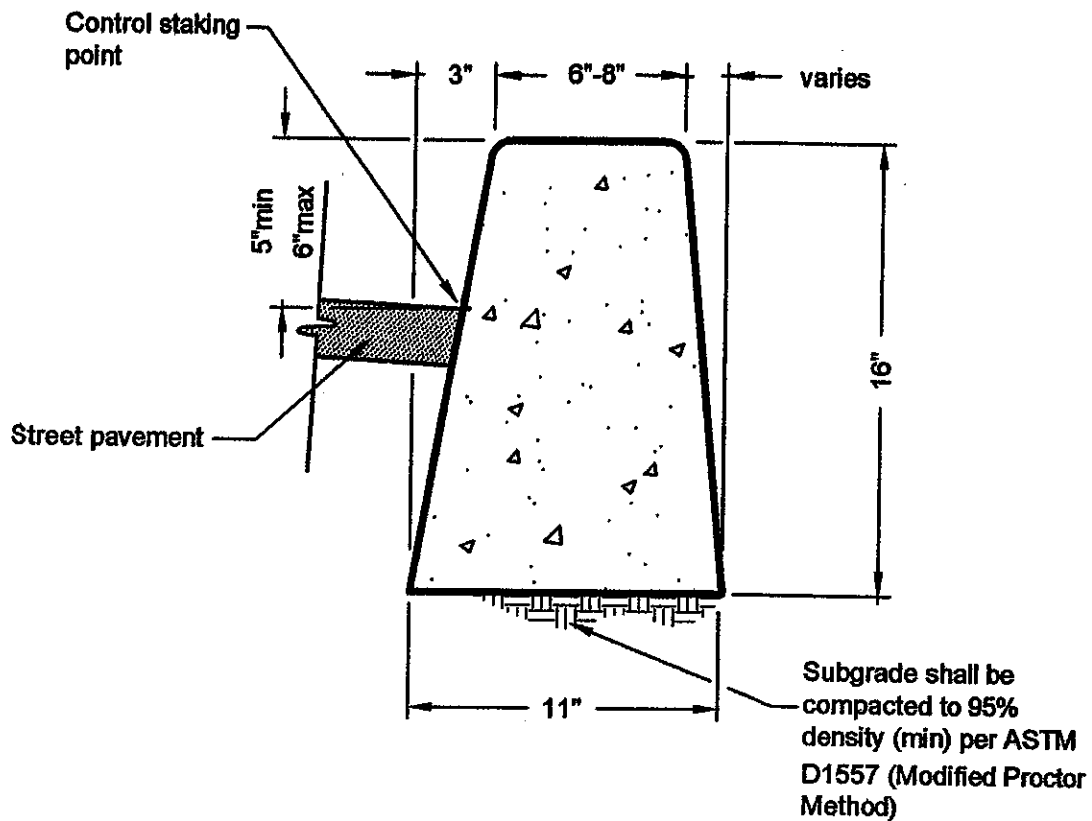
CURB AND GUTTER

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**CITY OF PULLMAN
ENGINEERING DIVISION**

ADOPTED: 12/14/04



TYPICAL SECTION

NOTES:

1. Construction joints with tooled edges shall be cut 1/4 to 1/3 of the section depth at 10 foot intervals. Curb joints shall match street joints when adjacent to concrete street pavement.
2. Through joints and full form plates shall not be used except where specifically approved by the engineer.
3. All exposed corners shall be finished to a 1/2 inch minimum radius.
4. Do not use expansion joints
5. Construction stakes shall establish face of curb for horizontal control and pavement grade for vertical control.
6. Standing curb shall be used only where the existing curb is predominantly standing curb and with the Engineer's approval.

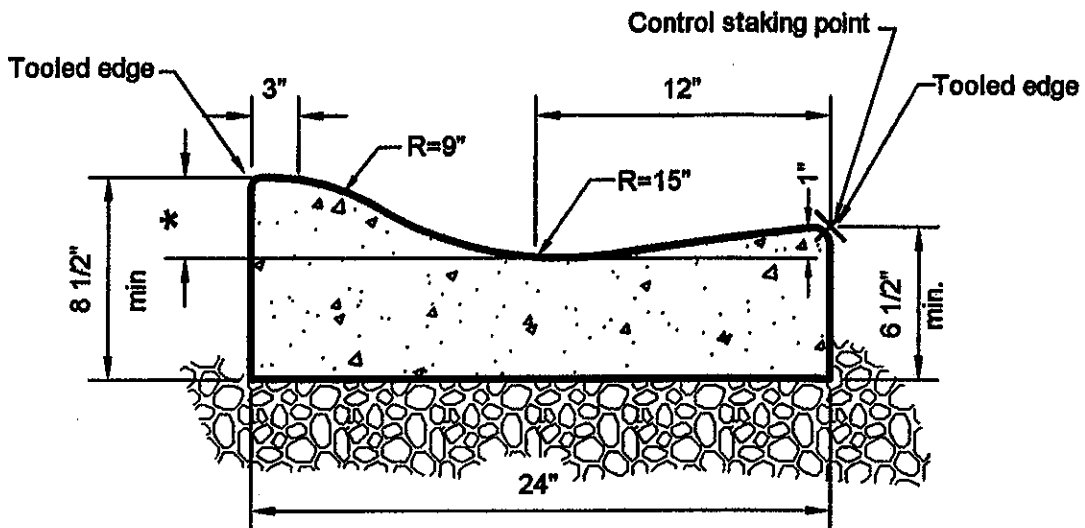
AutoCAD: Curb - Standing Style

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DSS

STANDING CURB

PAGE NO:

6



* 3 1/2" max, 2 1/2" min.

TYPICAL SECTION

NOTES:

1. Rolled curb and gutter shall not be used :
 - A. On streets in commercial and industrial zoned areas.
 - B. On streets with longitudinal (lengthwise) grades in excess of 10 percent.
 - C. On any arterial.
 - D. Without prior approval of the Engineer.
2. Changes from standard curb and gutter to rolled curb require a smooth transition of 30 inches length (min).
3. Joint spacing, base rock, and materials shall be as for standard curb and gutter.
4. All exposed corners shall be finished to a 1/2-inch radius (min).
5. Catch basins in rolled curb and gutter shall be similar in material and dimensions to standard frames and grates, but with no hood, and with a cross section approximating that of the rolled curb and gutter. Use IFCO #501 frame and grate or approved equal.
6. Standard curb ramps are required in rolled curb.
7. Do not use expansion joints.
8. Construction stakes shall establish lip of gutter for both horizontal and vertical control.
9. Sidewalk adjacent to rolled curb requires a 5-foot-wide landscape strip between the back of curb and the sidewalk.

AutoCAD: Curb & Gutter - Rolled

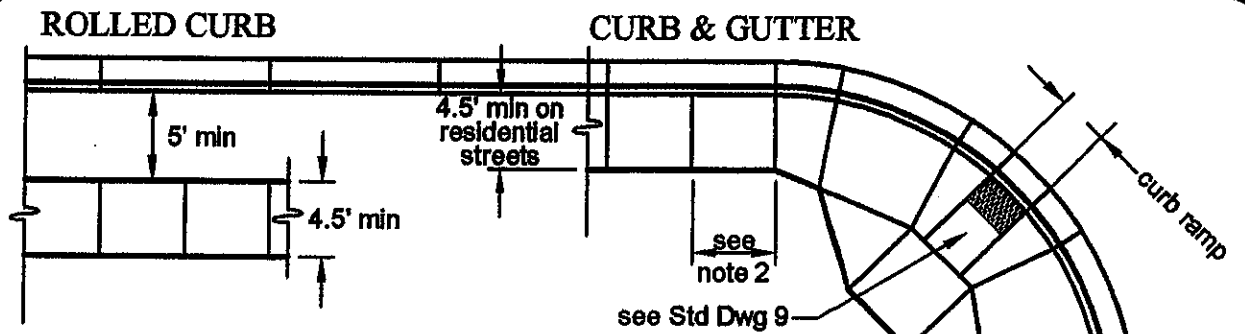
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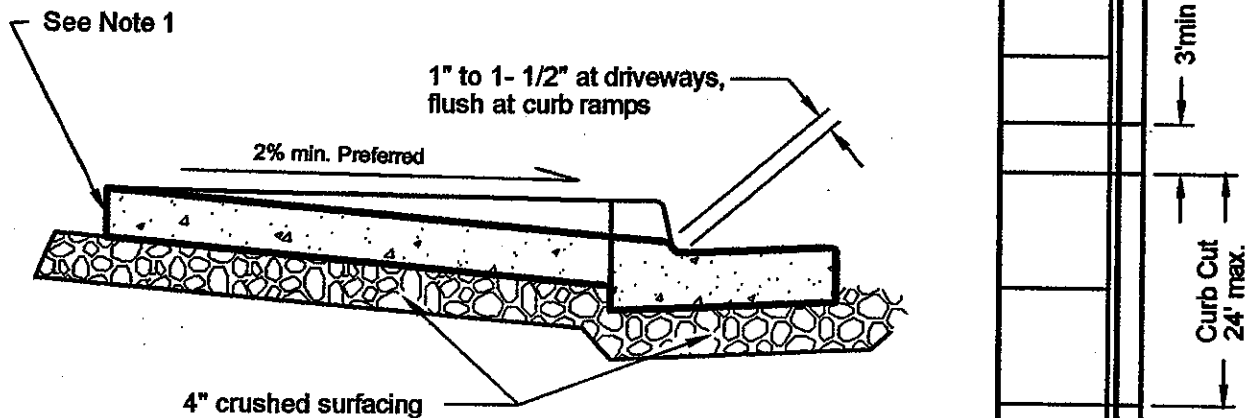
ROLLED CURB AND GUTTER

PAGE NO:

7



PLAN



SECTION AT CURB CUT

NOTES:

1. Sidewalks shall be 4 inches thick, except that they shall be 5-1/2 inches thick at curb cuts and curb ramps and where adjacent to rolled curbs.
2. Contraction joints shall be cut one-fourth the thickness (min) of the concrete. Spacing shall be approximately equal to sidewalk width, and shall match curb joints as shown.
3. 3/8-inch expansion joints are required between sidewalk and structures, only. (Sign posts, Walls, Hydrants, for example)
4. Curb cuts wider than 24 feet require prior approval of the Engineer.

AutoCAD: Curb & Sidewalk Layout

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DBB

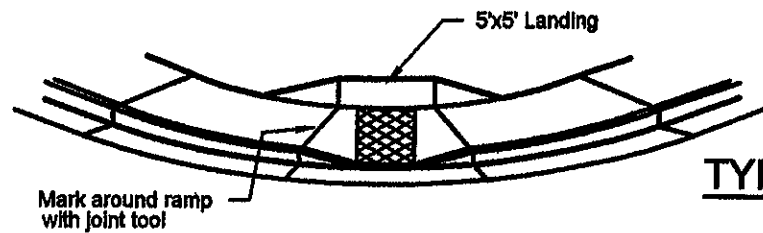
SIDEWALK AND CURB

PAGE NO:

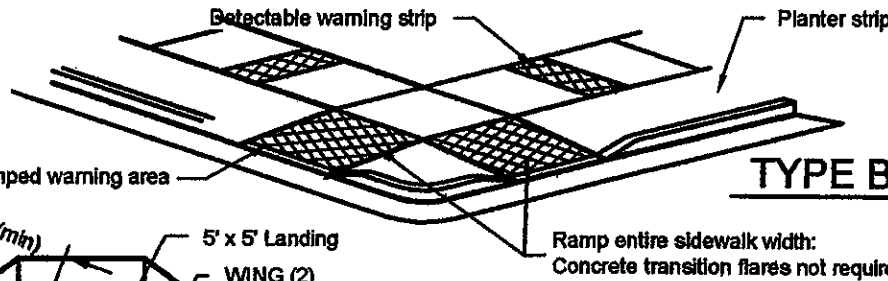
8

CITY OF PULLMAN
ENGINEERING DIVISION

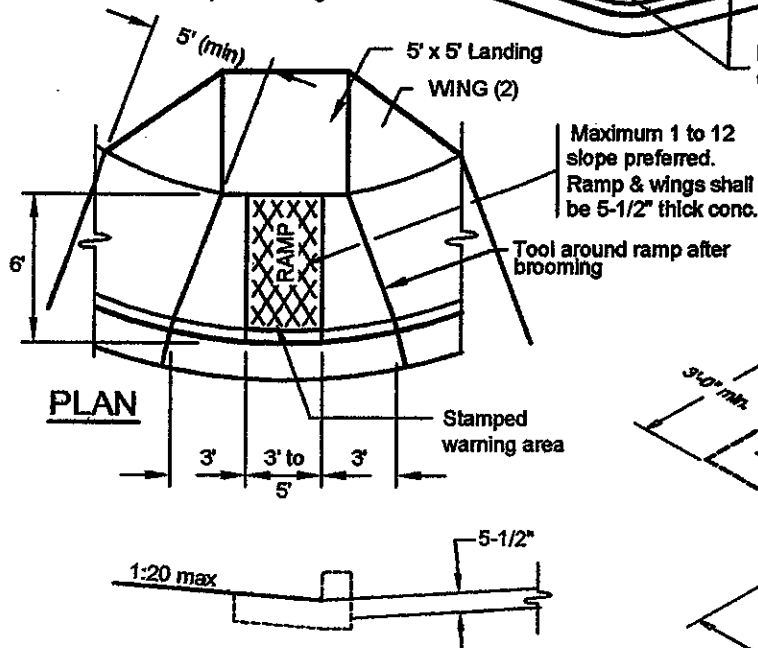
ADOPTED: 12/14/04



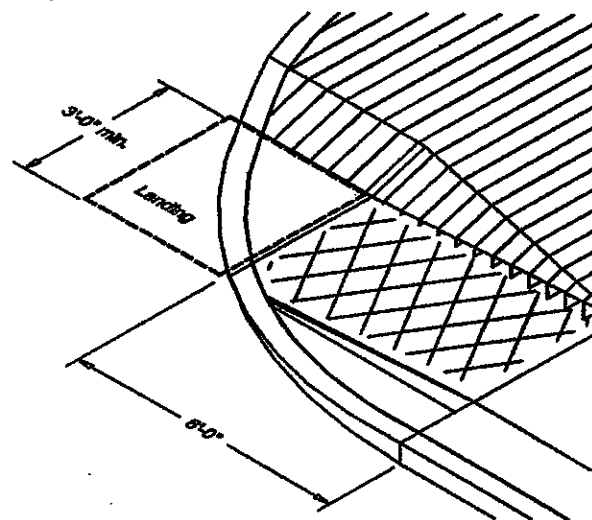
TYPE A RAMP



TYPE B RAMP



PARALLEL CURB RAMP



NOTES:

1. Exterior warning strips may be deleted if ramp is not in line with the main pedestrian path.
2. Ramp cross slopes and landing slopes should not exceed 3 %.
3. Ramps shall be flush at the gutter flow line.
4. Construction of Type B ramps is preferred where both sidewalks are set back from the curb by an earth strip.
5. Ramps are required with all curb types.

AutoCAD: Curb Ramp

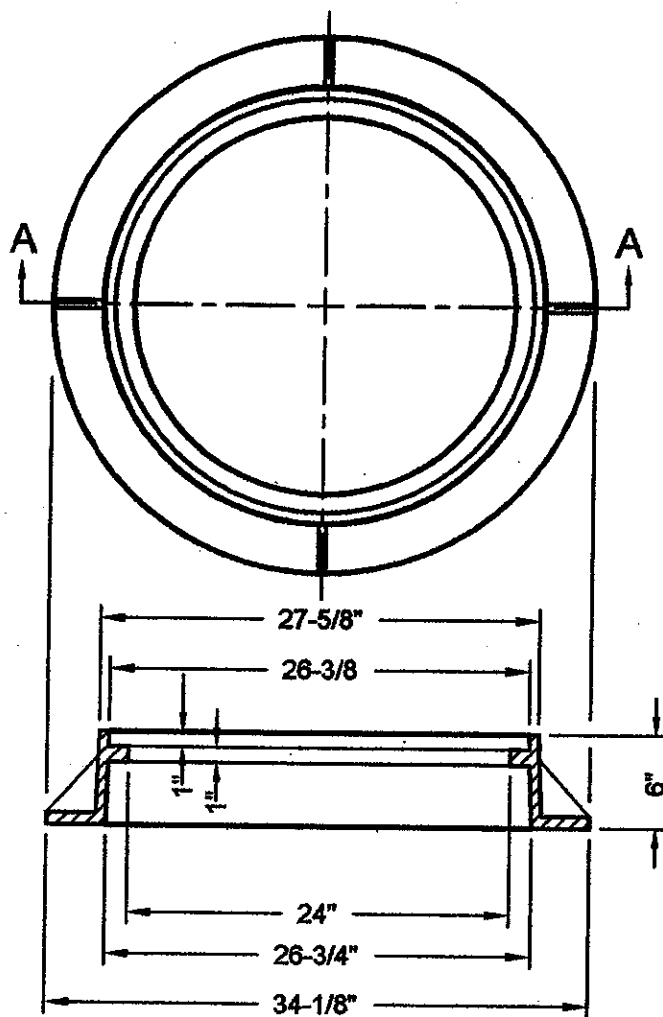
**CURB RAMP DETAILS
FOR ARTERIAL STREETS**

PAGE NO:

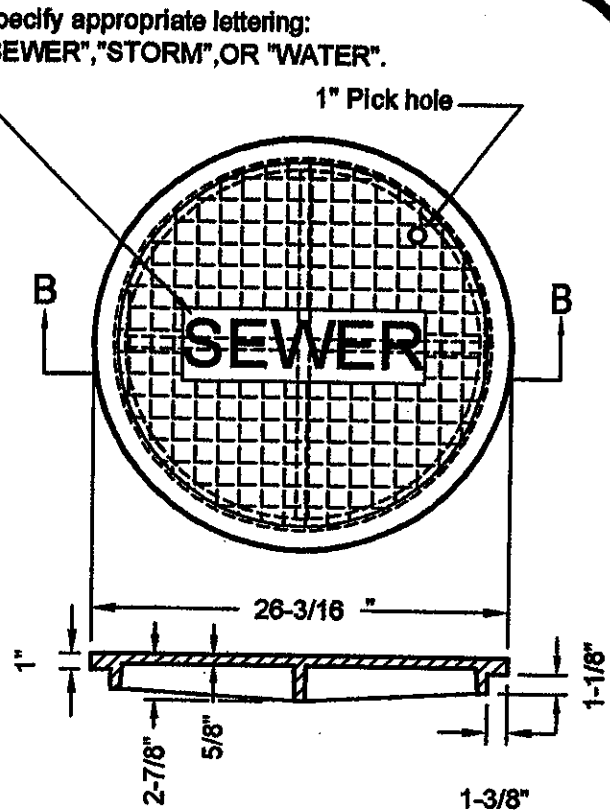
9

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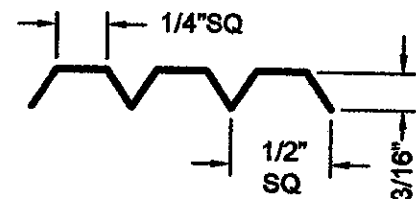
ADOPTED: 12/14/04



SECTION A-A



SECTION B-B



**COVER ANTISKID
DESIGN DETAIL**

NOTES:

1. See Section 7-05 of the Standard Specifications for additional details.
2. Use Inland Foundry # 822 frame and cover or approved equal.
Frame Material: ASTM A48 grey iron;
Cover Material : ASTM A536 Class 80-55-06 ductile iron.
Unit Weight : 284 pounds (min).
3. The Engineer may approve shorter frames down to 4 inch (min) where shallow sewers limit adjustments above standard cones.
4. Adjust frame to grade so that top of lid is 1/4" to 3/8" below finished grade.

AutoCAD: Manhole Frame & Cover

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MANHOLE FRAME AND COVER

PAGE NO:

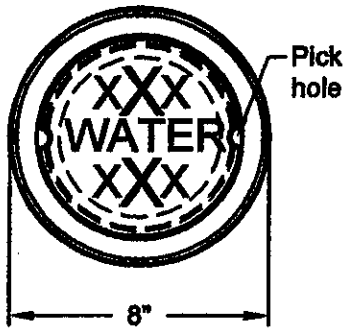
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CITY OF PULLMAN
ENGINEERING DIVISION

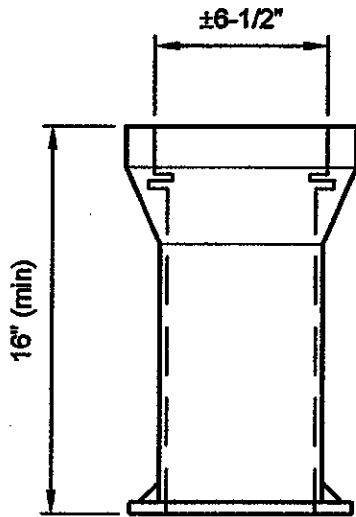
ADOPTED: 12/14/04

NOTES:

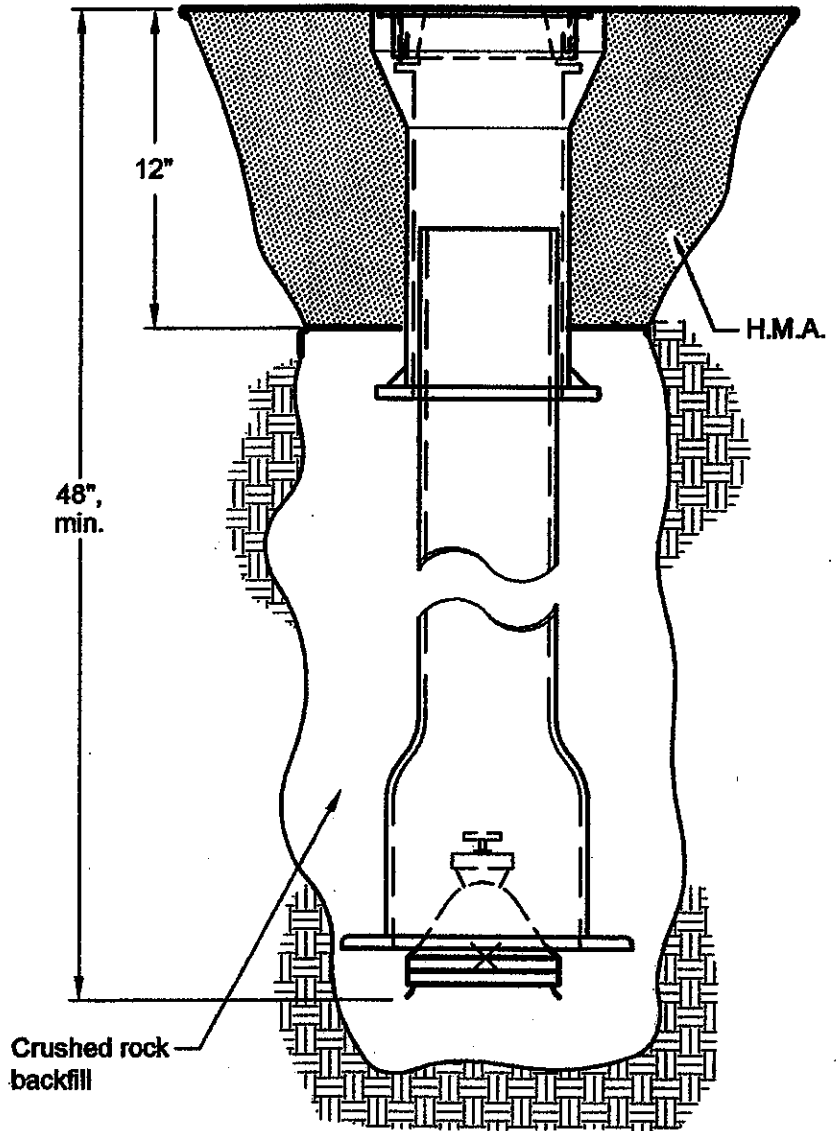
1. Valve box and cover shall be ASTM Class 30 grey iron.
2. Use with matching gate valve box extension pipe.
3. See utility cover adjustment, Standard Drawing 23. Use TYLER ® Series 6855 or approved equal.
4. Compact hot mix asphalt patch in no greater than 3-inch lifts.



PLAN



SIDE VIEW



**TYPICAL
INSTALLATION**

AutoCAD: Waterline Valve Box & Cover

dwg 3-00

239

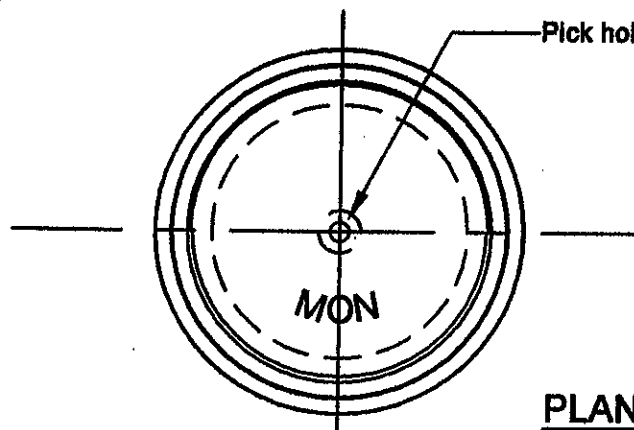
VALVE BOX AND COVER

PAGE NO:

11

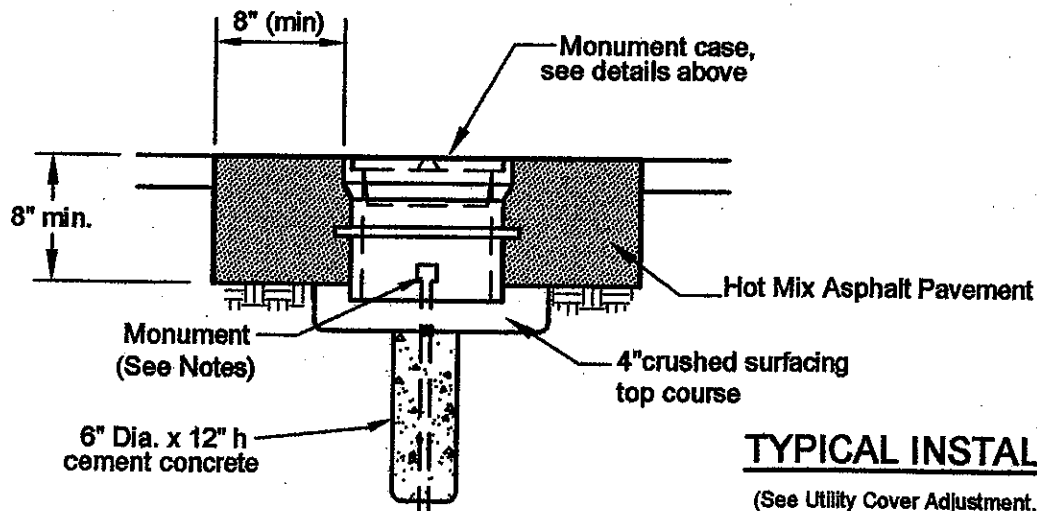
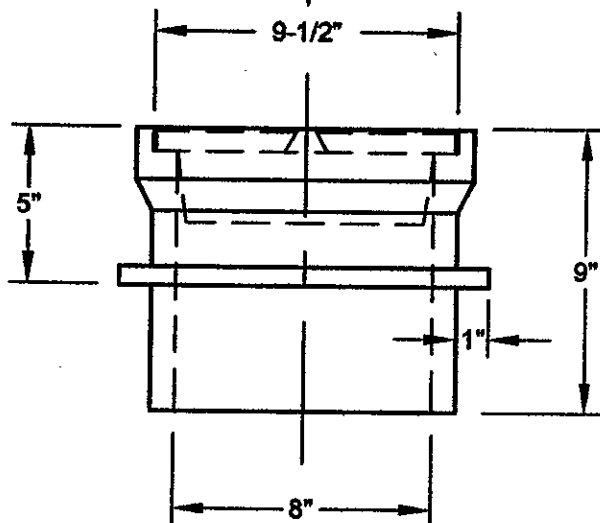
**CITY OF PULLMAN
ENGINEERING DIVISION**

ADOPTED: 12/14/04



NOTES:

1. Monument case shall be ASTM class 30 grey iron.
2. Monument shall be installed in the case by a licensed surveyor after completion of road construction.
3. Monument shall consist of a 5/8-inch diameter by 30-inch long deformed steel bar with a licensed surveyor's top cap and license number, punched or tacked to show center point.



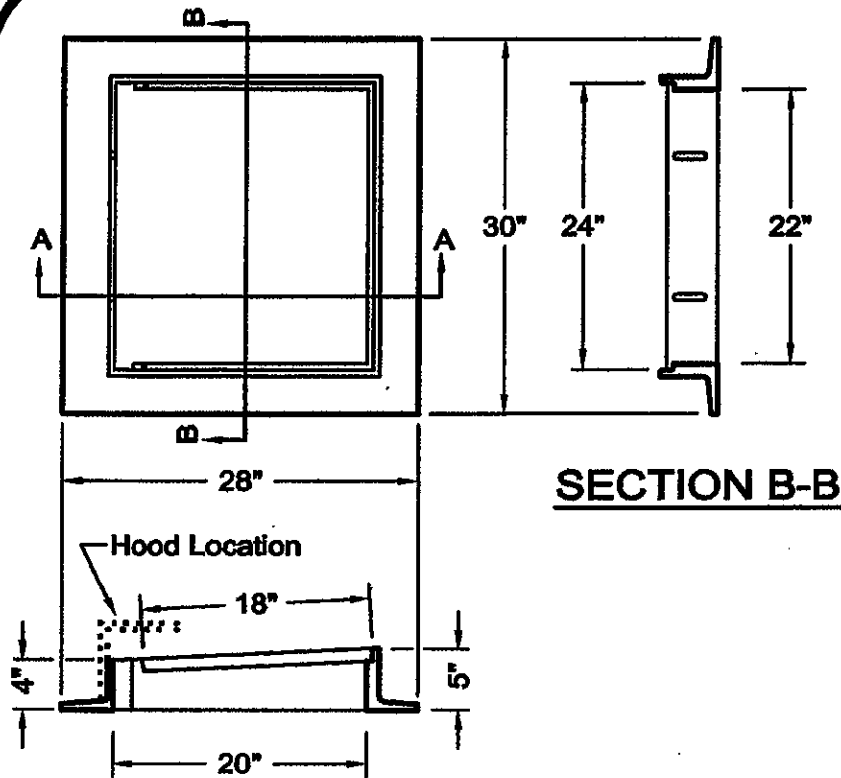
AutoCAD: Monument Details

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MONUMENT DETAILS

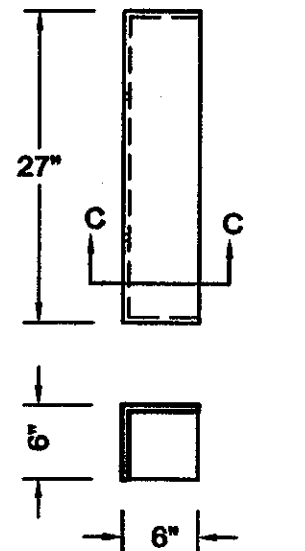
PAGE NO:

12

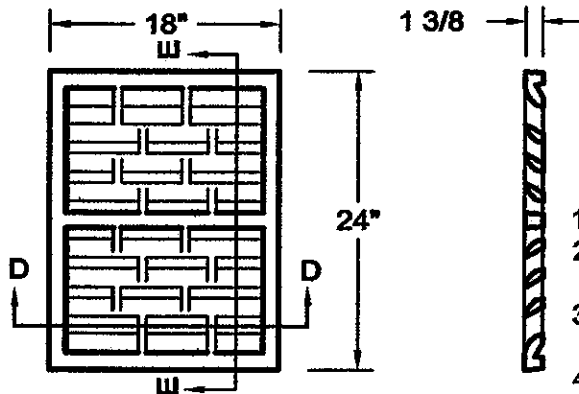


SECTION A-A

SECTION B-B



SECTION C-C



SECTION D-D

SECTION E-E

NOTES:

1. Frames to be ASTM A48 class 30 grey iron.
2. Grate castings to be ASTM class 80-55-06 ductile iron.
3. Lids and frames shall be machine ground to prevent rocking.
4. See Standard Drawing # 7 for rolled curb frame and grate.
5. Use Inland Foundry #571 frame with Type B hood. Use style D2 grate (shown) at low points. Otherwise, use style D1 (one-way) grate, with vanes pointing against flow.

AutoCAD: Catch Basin Frame & Grate

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DRR

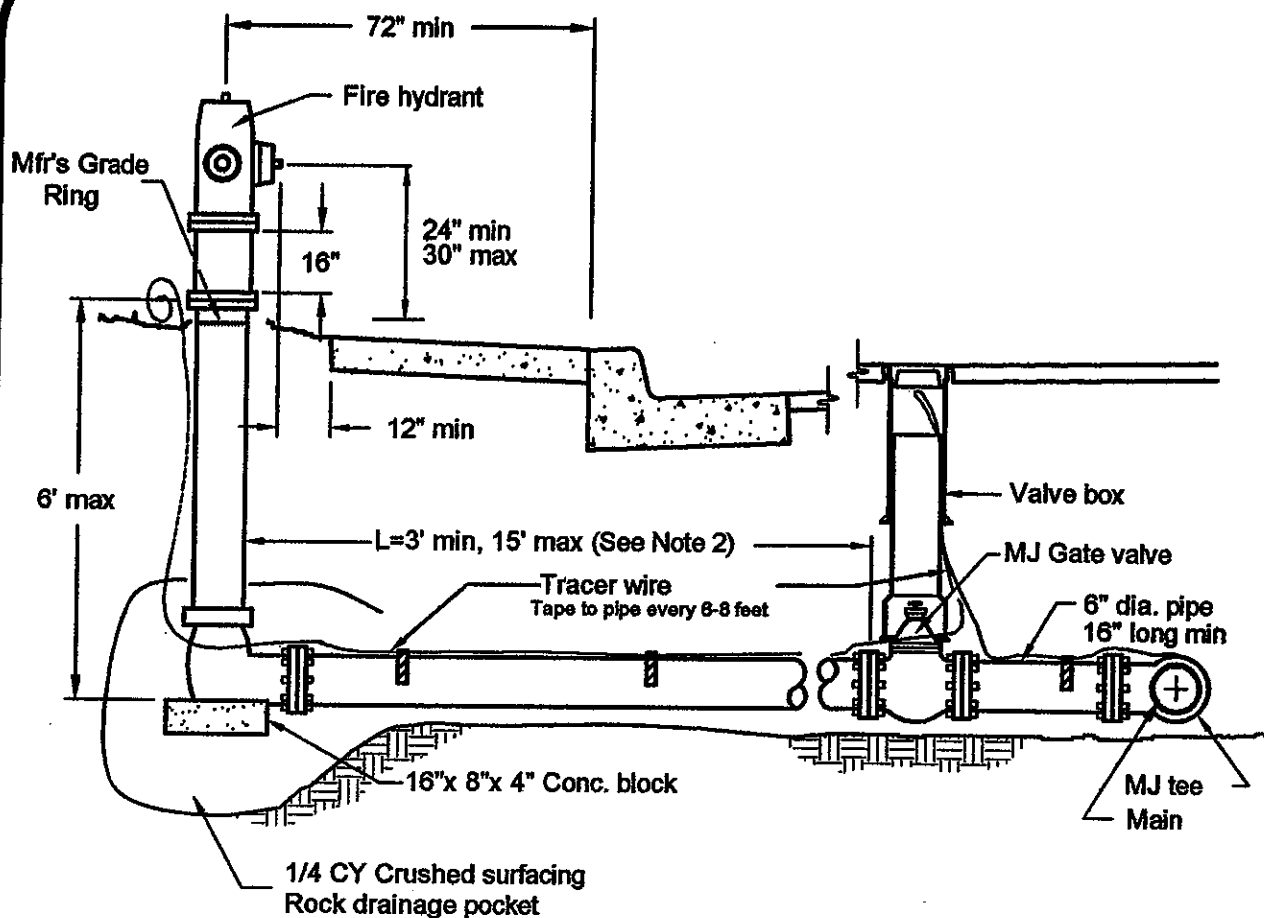
CATCH BASIN FRAME AND GRATE

PAGE NO:

13

CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: 12/14/04



TYPICAL INSTALLATION

NOTES:

1. Hydrant shall be mechanical joint "Waterous Pacer" Model WB-67-90-16" with two 2-1/2" NST nozzles and one 4-1/2" pumper connections, National Standard operating nut and caps, left-hand opening direction, and 5-1/4" valve opening.
2. If the distance from the hydrant to the tee exceeds 18 feet, use Std. Dwg. 15.
3. All joints shall be mechanical joints restrained with Romac Grip Rings or Foster connectors, unless otherwise approved by the Engineer.
4. Final grading in a 3-foot radius around the hydrant shall be within 24" and 30" below the center of the hydrant ports.
5. Place hydrant so that the manufacturer's grade ring is 2" above sidewalk, curb, or adjacent ground level.

AutoCAD: Fire Hydrant

208

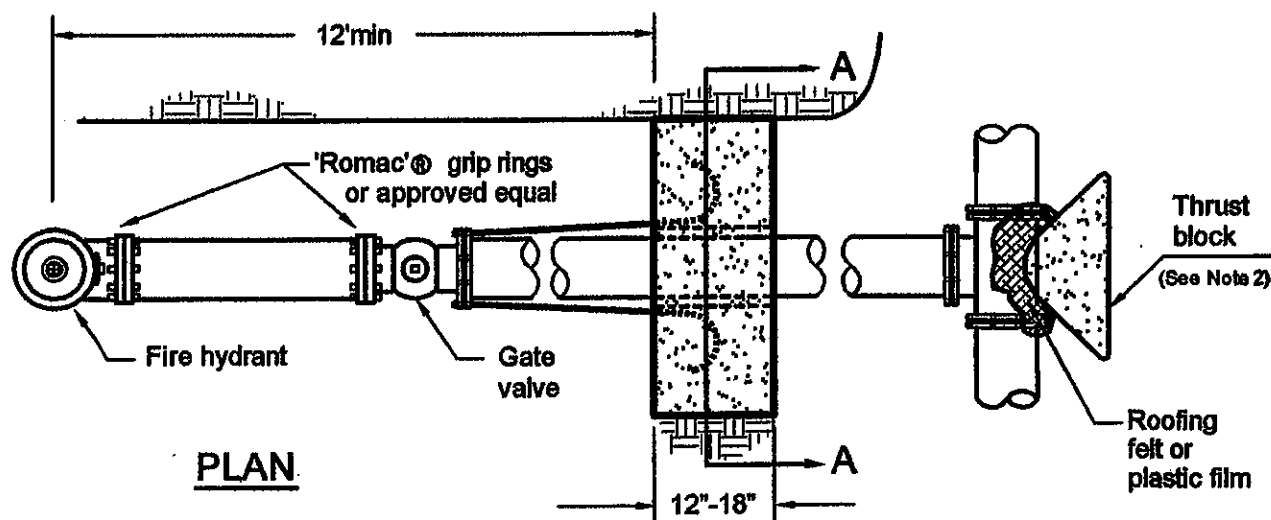
FIRE HYDRANT

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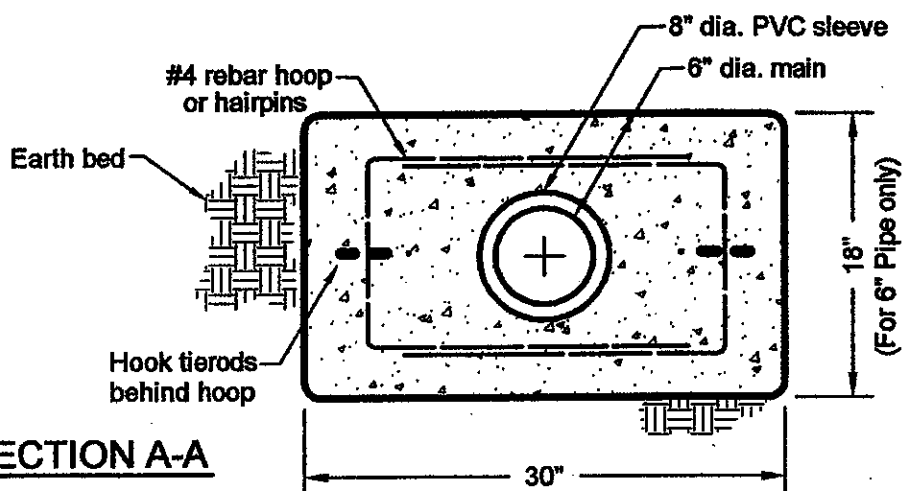
14

CITY OF PULLMAN
ENGINEERING DIVISION

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PLAN



SECTION A-A

NOTES :

1. Make threaded and bolted 3/4" diameter tierod connections to fitting with approved ductile lugs or 90° eye bolts.
2. Use 5-sack cement concrete. Calcium additive not allowed.
3. Wrap fittings with 6-mil plastic sheet.
Concrete must not interfere with flange bolt removal.
4. Tierods are not allowed between the hydrant and its gate valve.
5. Non-continuous circular connector rings, such as the Megalug brand are not allowed.

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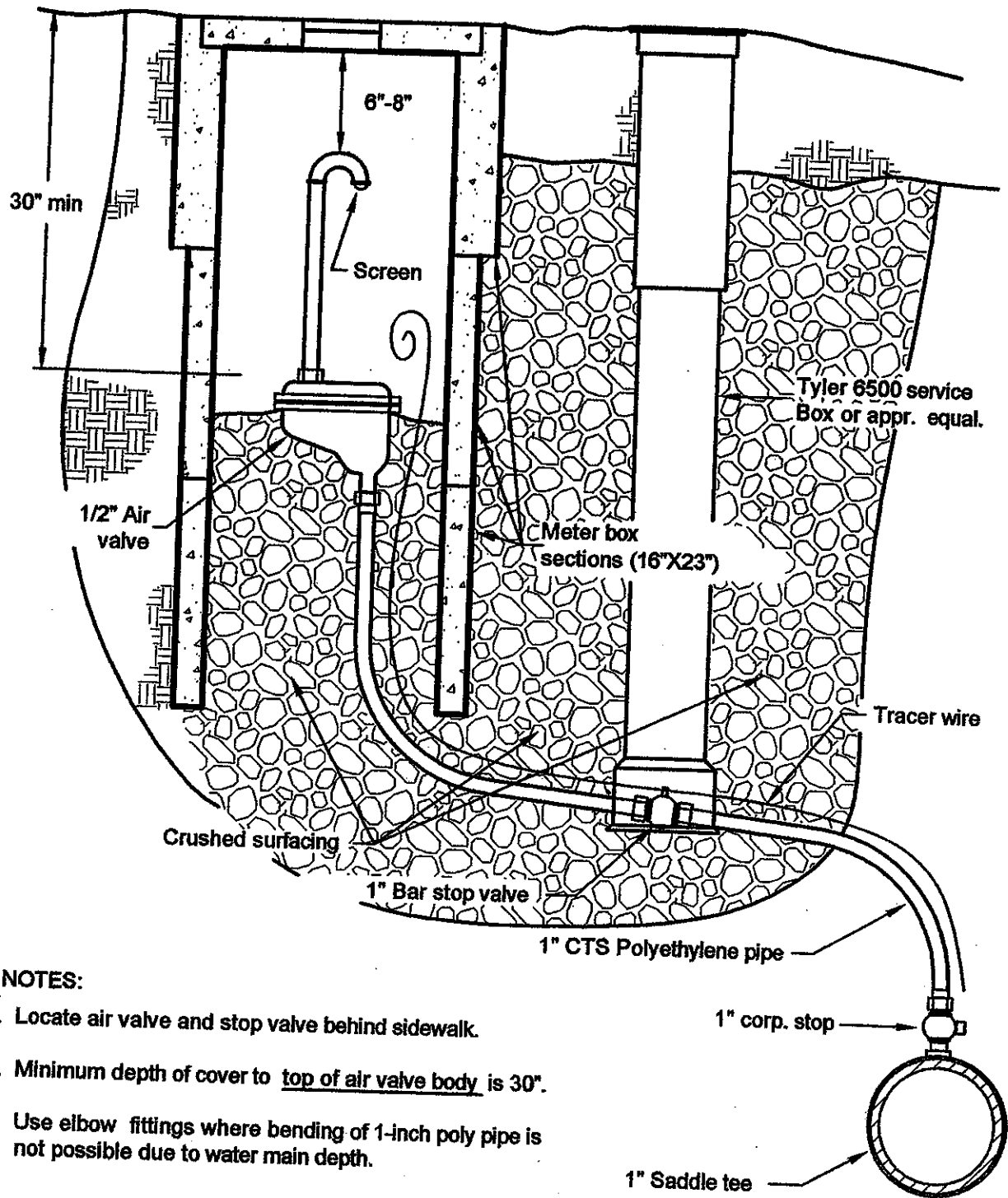
AutoCAD: Thrust Block - Saddle

209

SADDLE BLOCKS

PAGE NO:

15



NOTES:

1. Locate air valve and stop valve behind sidewalk.
2. Minimum depth of cover to top of air valve body is 30".
3. Use elbow fittings where bending of 1-inch poly pipe is not possible due to water main depth.

AutoCAD: Waterline Air Valve

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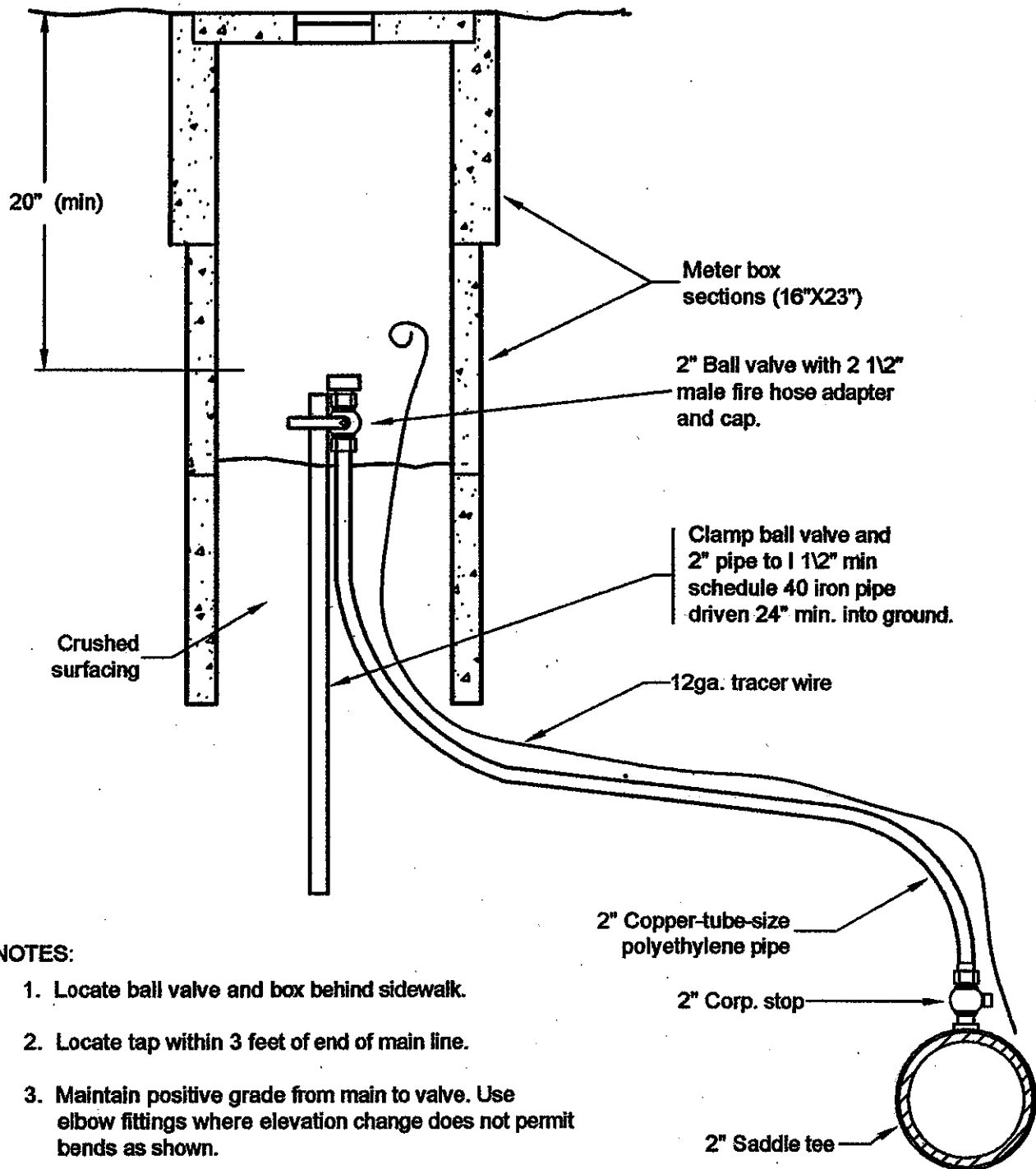
AIR VALVE

PAGE NO:

16

CITY OF PULLMAN
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ADOPTED: 12/14/04



AutoCAD: Waterline Blowoff Assy

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DDR

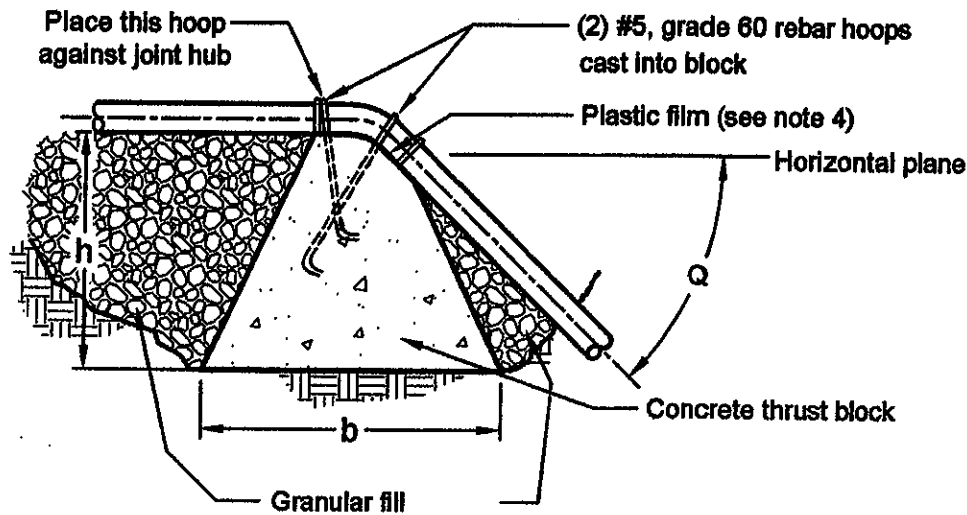
BLOWOFF ASSEMBLY

PAGE NO:

17

CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: 12/14/04



SIDE VIEW

NOTES:

1. Base dimensions (b) and height (h) to be approximately equal.
2. Use 5-sack cement concrete. Calcium additive not allowed.
3. Do not exceed calculated size by more than 10% .
4. Wrap fittings in 6-mil plastic. Concrete shall not interfere with flange bolt removal.
5. Block size determined by $B_v = T/W_c$

Where :

B_v = Volume in cubic feet

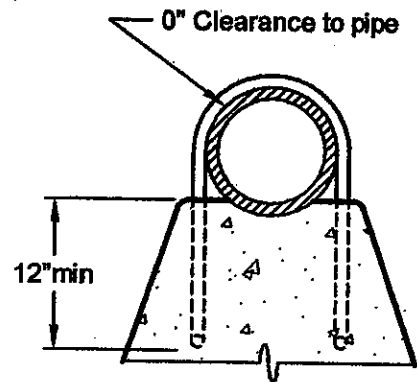
T = Vertical force element = $PA \sin Q$

W_c = Weight per cubic foot of concrete
(150 lb./cu. ft.)

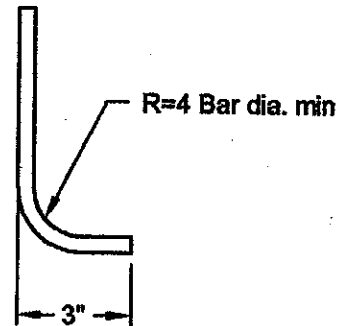
P = Test pressure at block elevation (psi)

A = Cross-sectional area of pipe (sq. in.)

Q = Fitting angle $Q \leq 45$ degrees .



HOOP DETAILS



BAR BENDING DIAGRAM

AutoCAD: Thrust Block - Gravity

DRR

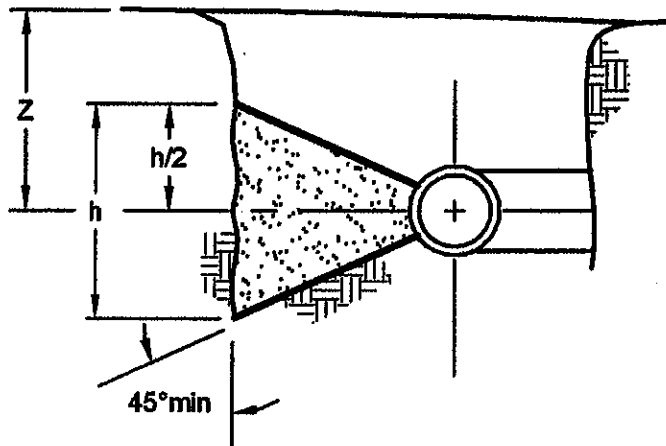
GRAVITY THRUST BLOCK DESIGN

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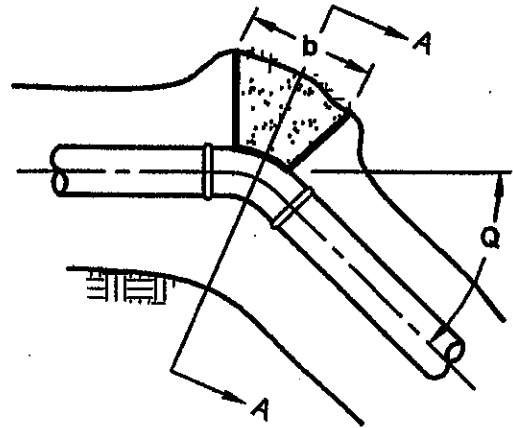
18

CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: 12/14/04



SECTION A-A



PLAN

NOTES:

1. Use 5-sack (min) concrete; 2 % calcium (max).
2. Do not exceed the calculated block dimensions by more than 10 % .
3. Protect fitting with 6-mil plastic before pouring thrust block.
Concrete shall not interfere with flange bolt removal.
4. Determine block dimensions as follows :

$$\text{Block Bearing Area} = hb = \text{Thrust} / \text{Passive soil pressure} = T / P_p$$

$$\text{Thrust (lbs)} = 2PA \sin(Q / 2) \text{ or } T = PA \text{ for ends and tees}$$

Where : A = Cross-sectional area of pipe (Sq. Inches)

P = Test pressure at fitting (psi)

Q = Fitting angle

P_p = Passive soil pressure (lbs/Sq. Ft) .

P_p for saturated clay = $gZ + 2C$

P_p for Palouse Loess at optimum moisture content = $gZ \tan^2(45^\circ + F / 2) + 2C \tan(45^\circ + F / 2)$

P_p for granular material = $gZ \tan(45^\circ + F / 2)$

Where : g = Weight per cubic foot of soil

Z = Depth in feet from ground surface to center of pipe

C = Cohesion factor = 200 psf for Palouse Loess

F = Internal friction angle of soil. Use 28° for Palouse Loess, and 42° for granular material

AutoCAD: Thrust Block - Bearing

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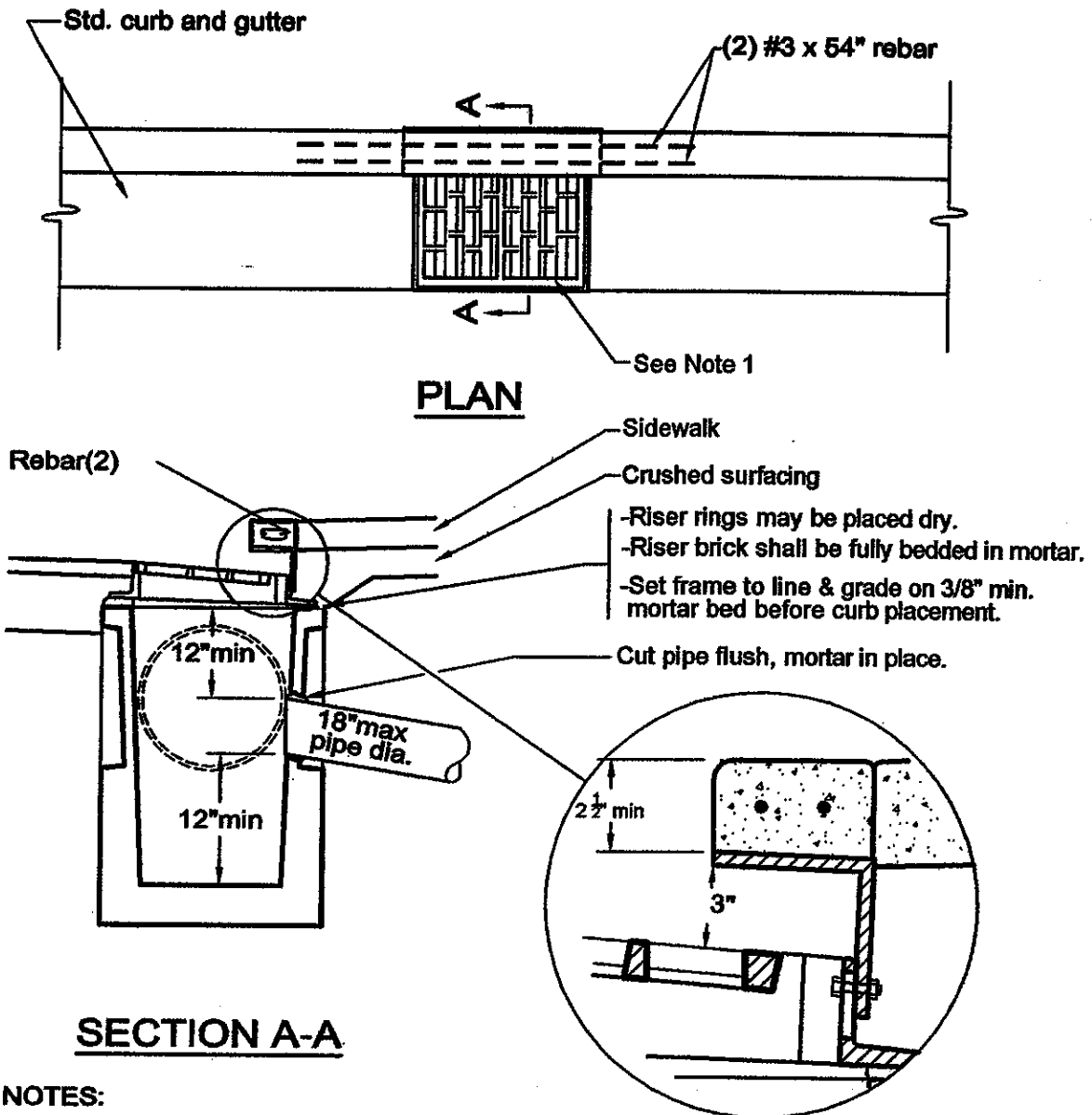
BEARING THRUST BLOCK DESIGN

PAGE NO:

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CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: 12/14/04



NOTES:

1. Frame and grate per Standard Drawing No. 13.
2. Depress back of lid 1 inch at flowline to provide a 2 - inch fall across the grate.
Gutter lip and top of curb are not depressed.
3. Use WSDOT Type 1 precast catch basin box.
4. Set the catch basin box on 2 inches (min) layer of crushed surfacing leveling course.
5. Set frame to provide 90 % (min) clear drainage opening with reference to the box opening.
6. Storm drain pipeline shall be installed with no less than 2 feet of cover as measured from finished grade.

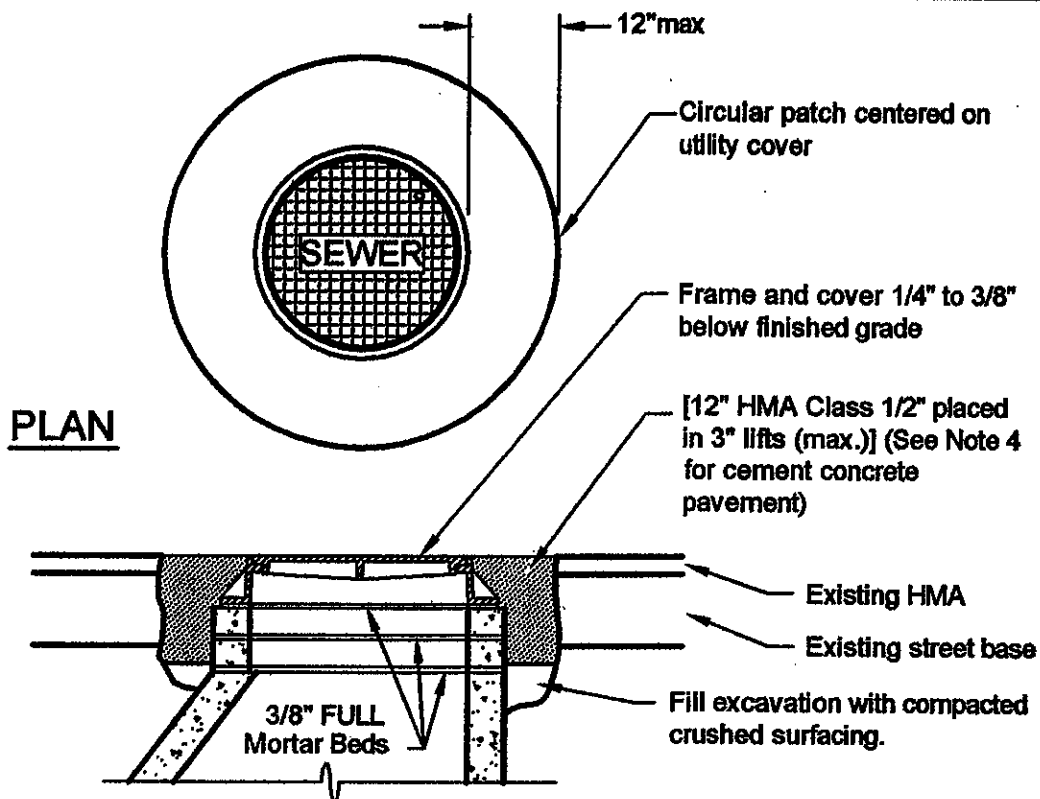
AutoCAD: Catch Basin

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CATCH BASIN

PAGE NO:

22



TYPICAL SECTION THROUGH MANHOLE

NOTES:

1. Keep the excavation to the minimum depth required to adjust the cover.
2. Place crushed surfacing in 6-inch lifts. Compact to 95 % of maximum theoretical density per ASTM D 1557 (Modified Proctor method) from the bottom of the excavation to within 12 inches of finished grade. Place, compact HMA, Class 1/2" in 3-inch lifts to finished grade. All compaction shall utilize approved methods.
3. Place manhole adjustment rings and frames on a full bed of Type S mortar to ensure full bearing. (In unpaved areas outside of street zones, place manhole frames on a full bed of manhole barrel mastic).
4. Cement concrete pavement :
 - A. New construction : Provide a circular adjustment hole as shown.
 - B. Existing pavement : Provide a diamond-shaped hole as directed by the Engineer.
 - C. Patch the hole with 7 sack (3/4") Portland cement concrete as thick as the existing pavement, but not less than 5-1/2 inches thick.

AutoCAD: Utility Cover Adjustments

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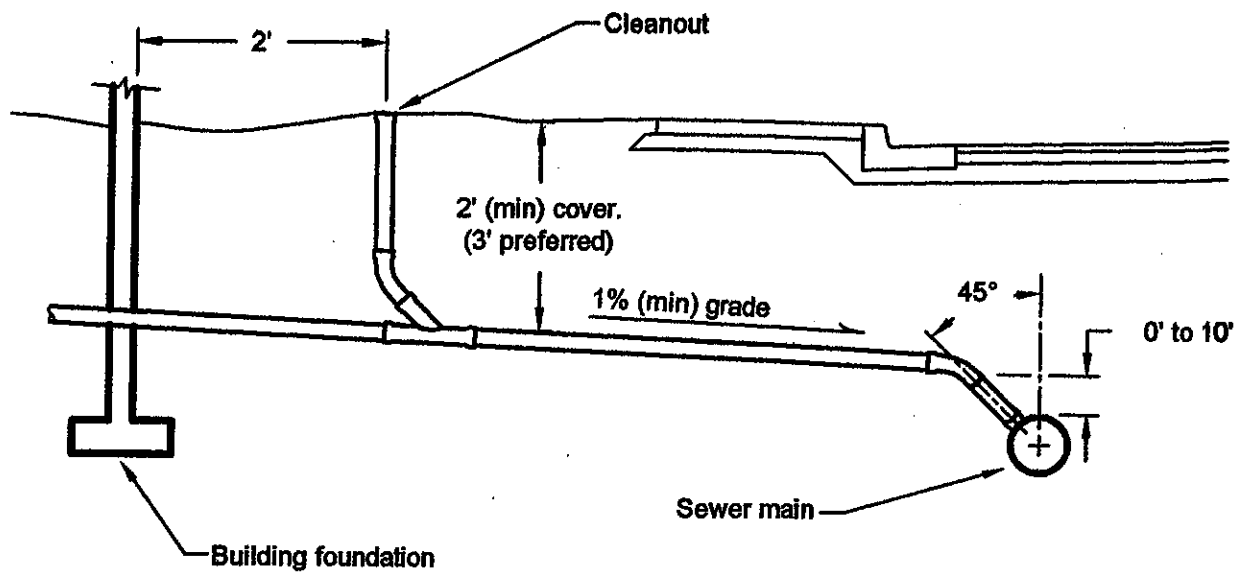
UTILITY COVER ADJUSTMENT

PAGE NO:

23

**CITY OF PULLMAN
ENGINEERING DIVISION**

ADOPTED: 12/14/04



TYPICAL SECTION

NOTES:

1. Pipe diameter shall be 4 inches or greater. See specifications for acceptable materials.
2. Minimum slope is 1 % . 2% is a preferred minimum.
3. Pipes stubbed out for future building connections shall be plugged with a fitting approved by the manufacturer.
4. Maximum distance between cleanouts shall be 100 feet. The maximum aggregate change in direction between cleanouts shall be 135 ° . Construct additional cleanouts as necessary.
5. A water service and a sewer service may be placed in the same trench if the water service is placed on an undisturbed earth shelf 12 inches (min) above the side sewer.
6. Abandoned sewer services shall be plugged within 5 feet of the property line with a fitting approved by the manufacturer or a minimum 2-foot long poured concrete plug.
7. Use this detail for storm and sanitary side sewers.

AutoCAD: Side Sewer Installation

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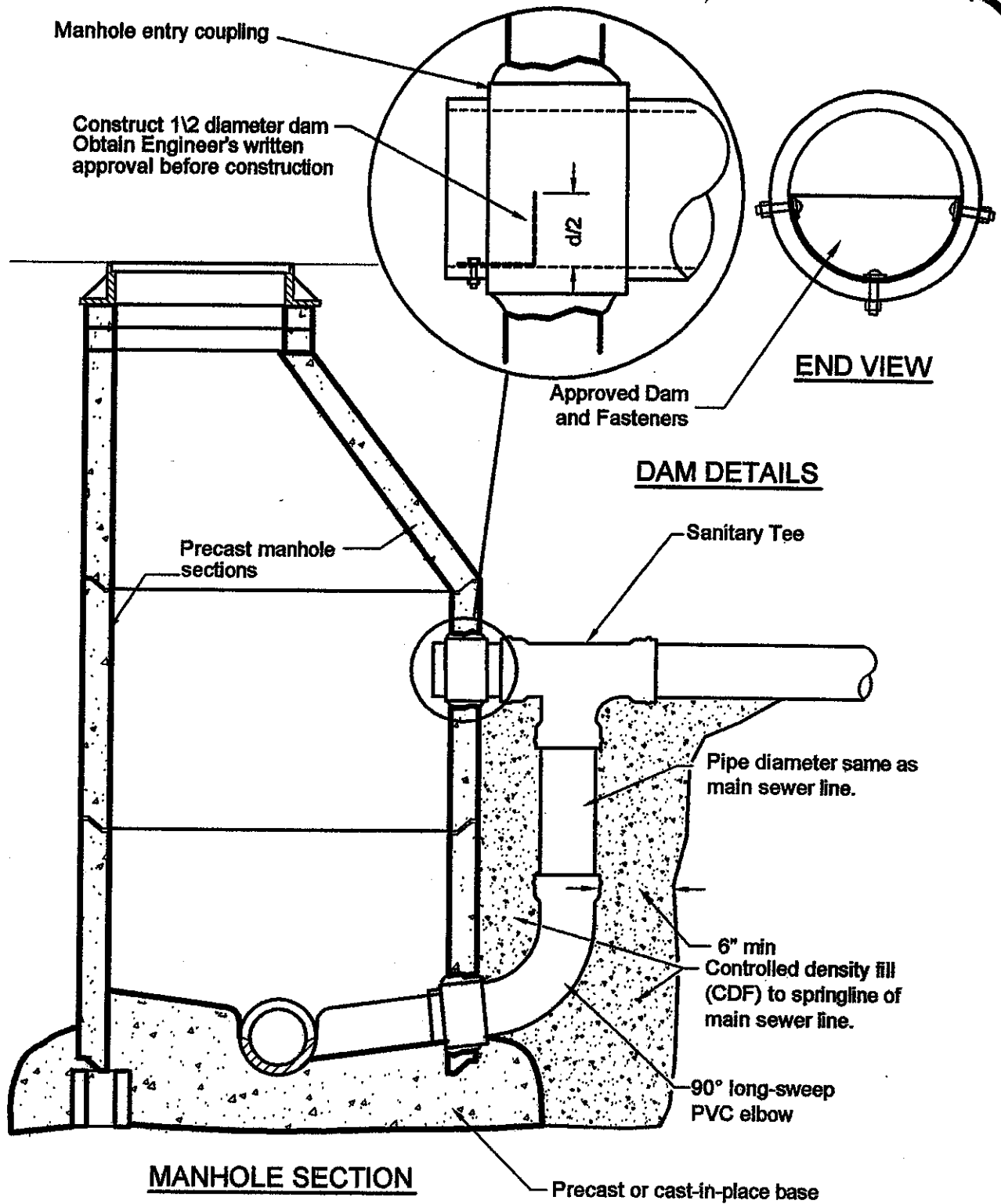
SIDE SEWER INSTALLATION (Storm and Sanitary Sewer)

PAGE NO:

24

CITY OF PULLMAN
ENGINEERING DIVISION

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AutoCAD: Manhole - Drop Style

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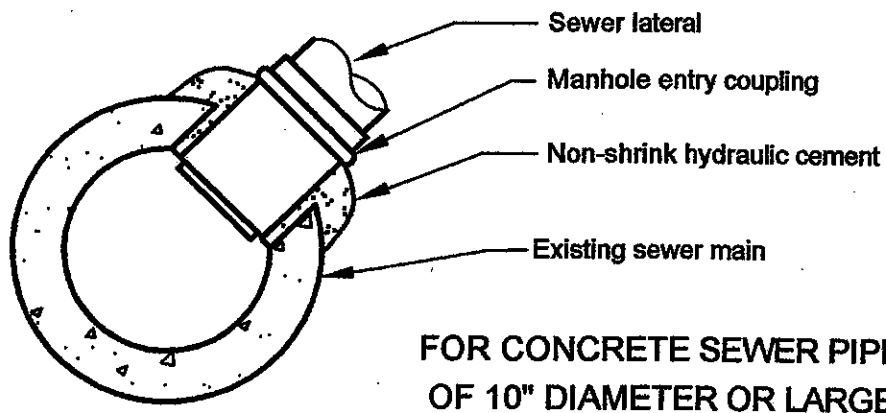
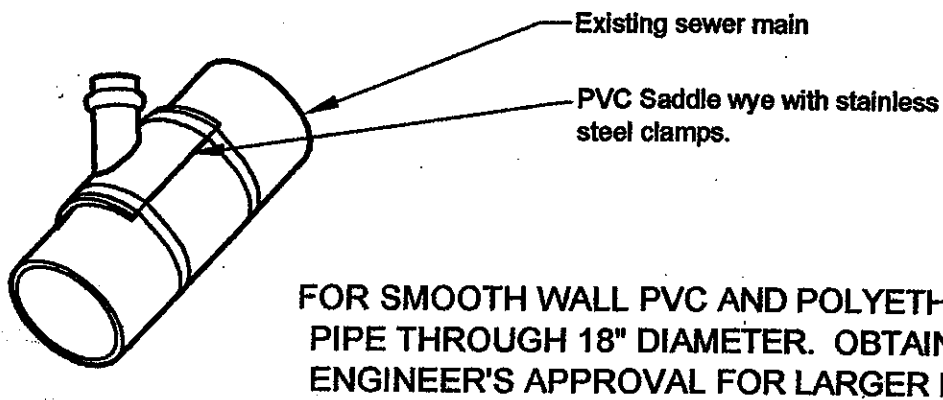
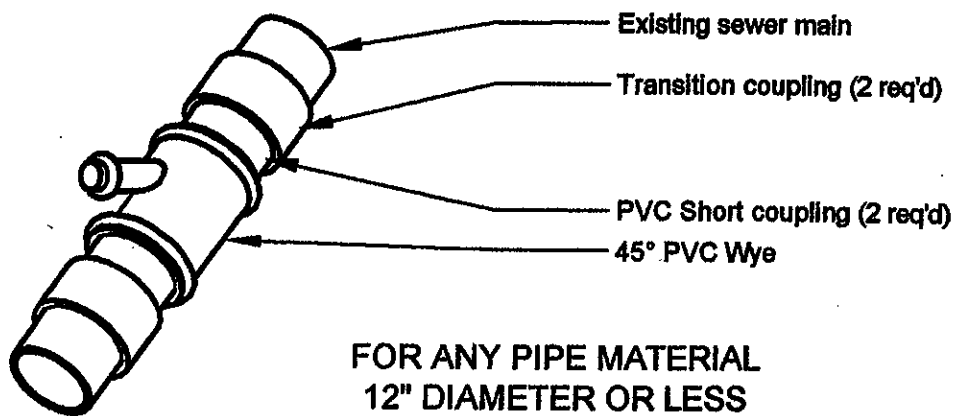
DROP MANHOLE

PAGE NO:

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CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: 12/14/04



NOTES:

1. For clay, cement concrete, or asbestos concrete pipe of 12-inch diameter and larger use 'Romac' ® Style "CB" sewer saddle.
2. Tap opening shall be in the top half of the tapped pipe. Tap shall intersect the main at approximately 45 degrees .

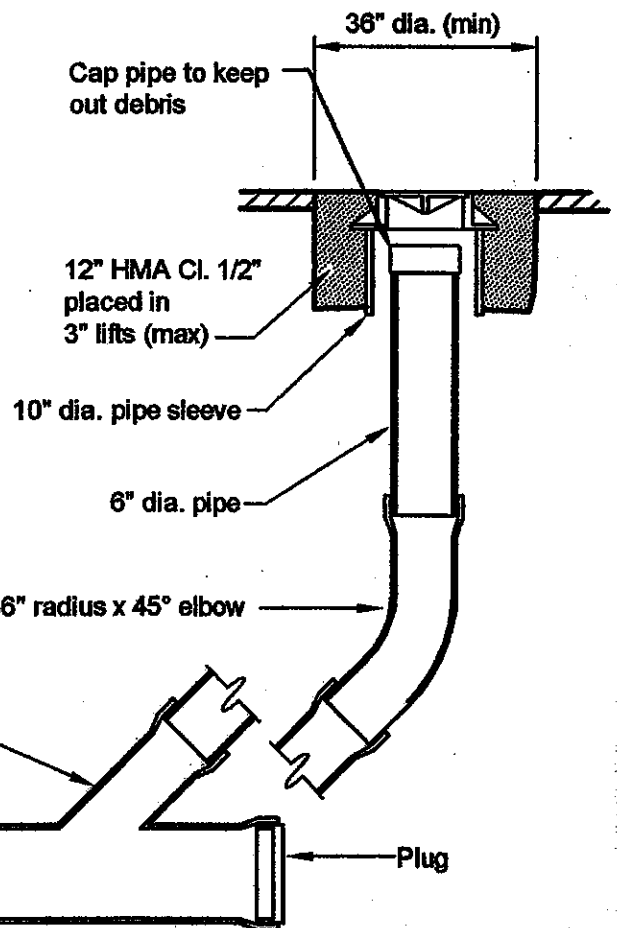
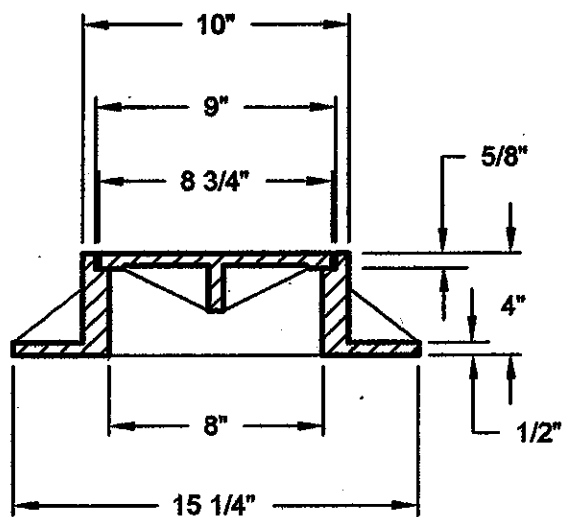
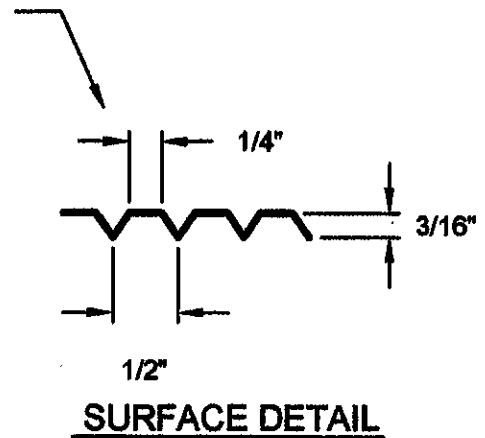
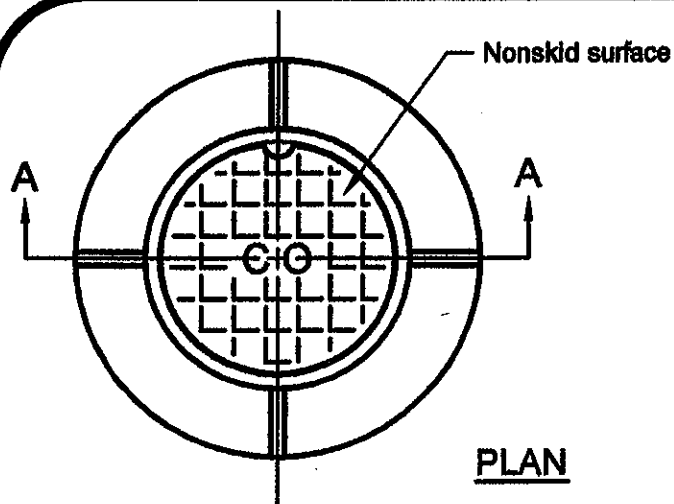
AutoCAD: Sewer Taps for Existing Mains

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DRR

SEWER TAP OPTIONS FOR EXISTING MAINS

PAGE NO:

26



NOTES:

1. Backfill entire assembly with crushed surfacing top course.
2. Case and lid shall be Inland Foundry #247-A cleanout or approved equal.

AutoCAD: Sewer Cleanout

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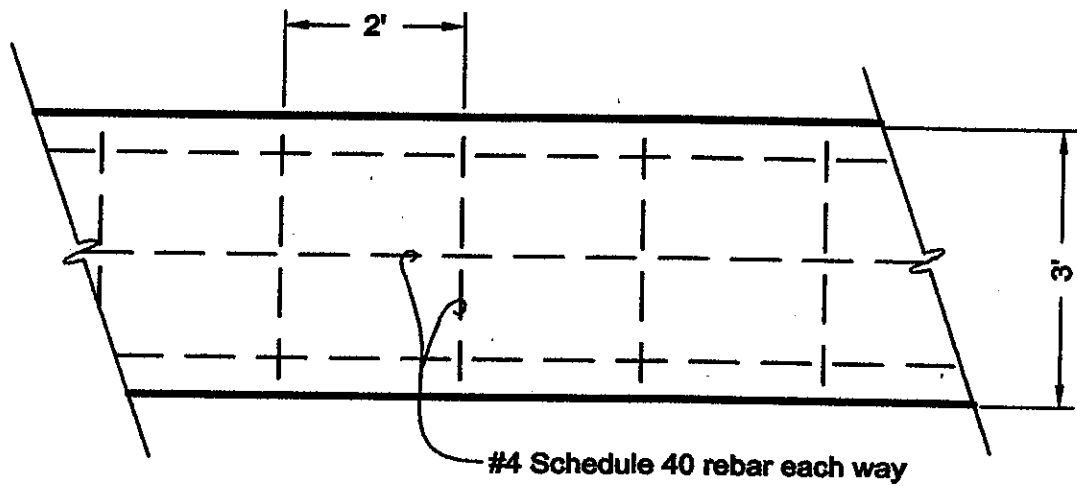
MAINLINE CLEANOUT

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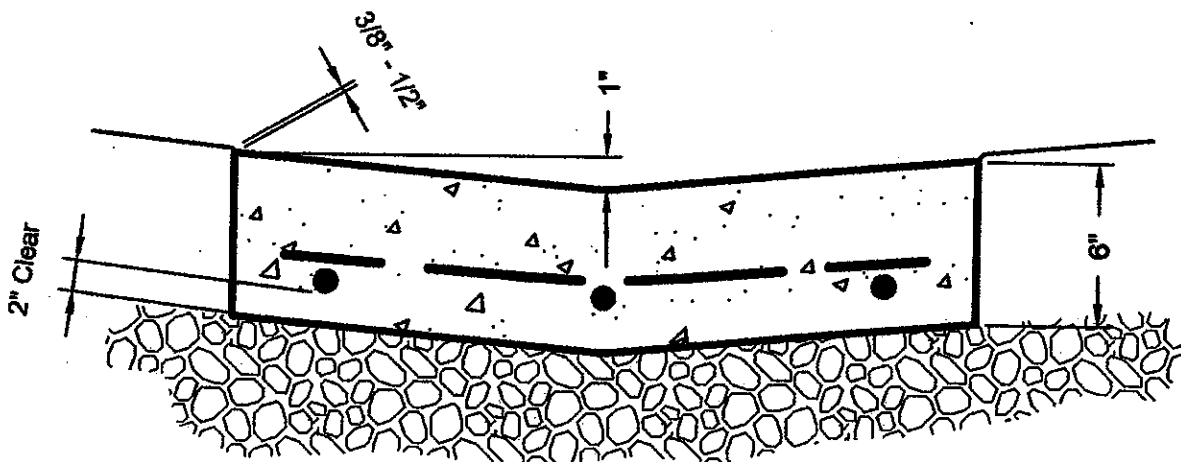
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PLAN



TYPICAL SECTION

AutoCad: Valley Gutter

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VALLEY GUTTER

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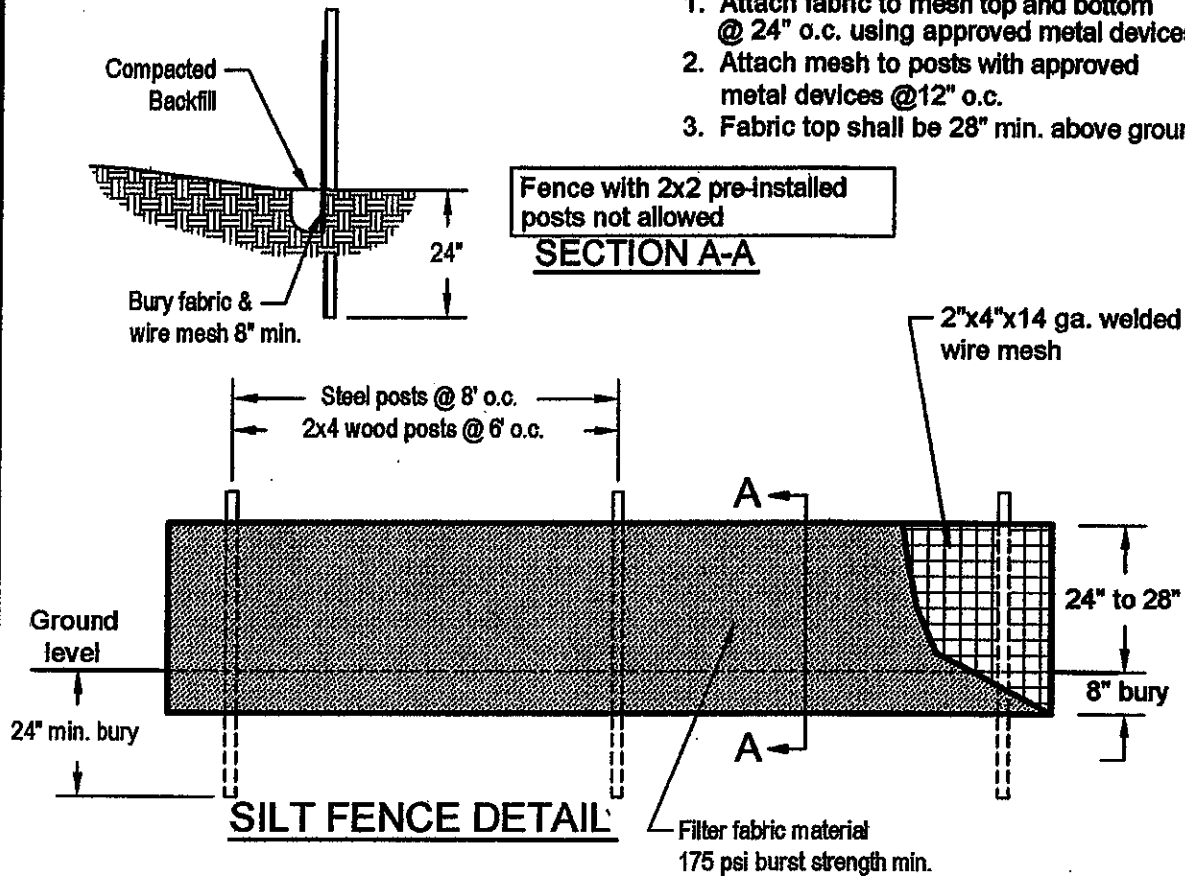
28

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SILT FENCE NOTES:

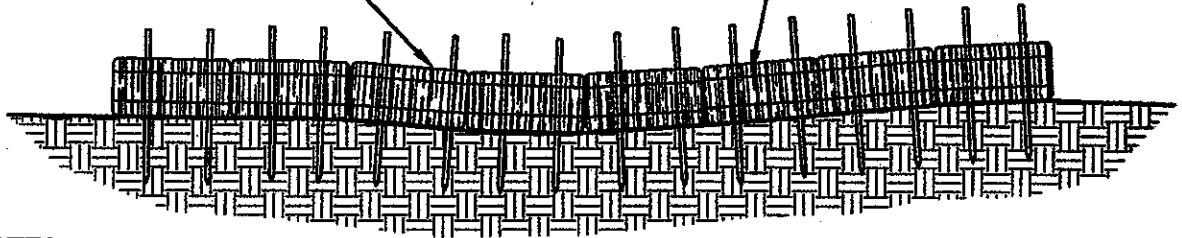
1. Attach fabric to mesh top and bottom @ 24" o.c. using approved metal devices.
2. Attach mesh to posts with approved metal devices @ 12" o.c.
3. Fabric top shall be 28" min. above ground



Stake bales as directed
Use 2 stakes with 12" min.
bury per bale

STRAW BALE DETAIL

Place bales with the
baling twine horizontal
as shown



NOTES:

1. Place straw bales as directed by the engineer to slow and control runoff on slopes and in swales and gullies, as needed. Do not use to replace required silt fence.
2. Siltation and detention controls shall be maintained for one year after construction is complete and permanent drainage facilities are operational.

AutoCAD: Erosion Control

04 dwc

EROSION BARRIERS

STANDARD DRAWING

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CITY OF PULLMAN
DEPARTMENT OF PUBLIC WORKS

ADOPTED: 12/14/04